Smithsonian

September 1993

Ready to go to work, a yoke of brawny oxen awaits the sound of the drover's voice (p. 82)

The future has arrived a

New PS/2 E

What's inside

Power supply: 24 watts.	Save power. Help save the earth.
10.4" active matrix TFT Color Monitor or PS/2 14" Energy Saver Color Monitor	Either one, a great energy-saving ergonomic choice.
New Quiet® Touch keyboard with TrackPoint II. And optional numeric keypad.	One is right where you write. The other is right where you calculate.
Processor: 486SLC2 50/25 MHz. 16KB Cache. Up to 16MB memory.	Who says you can't be fast and powerful and still consume less power?
Hard disk drive: 120MB PCMCIA (2.01) slots: 4 Type I's or II's or 2 Type III's.	Lots of room to grow, stretch, connect and add new capabilities.

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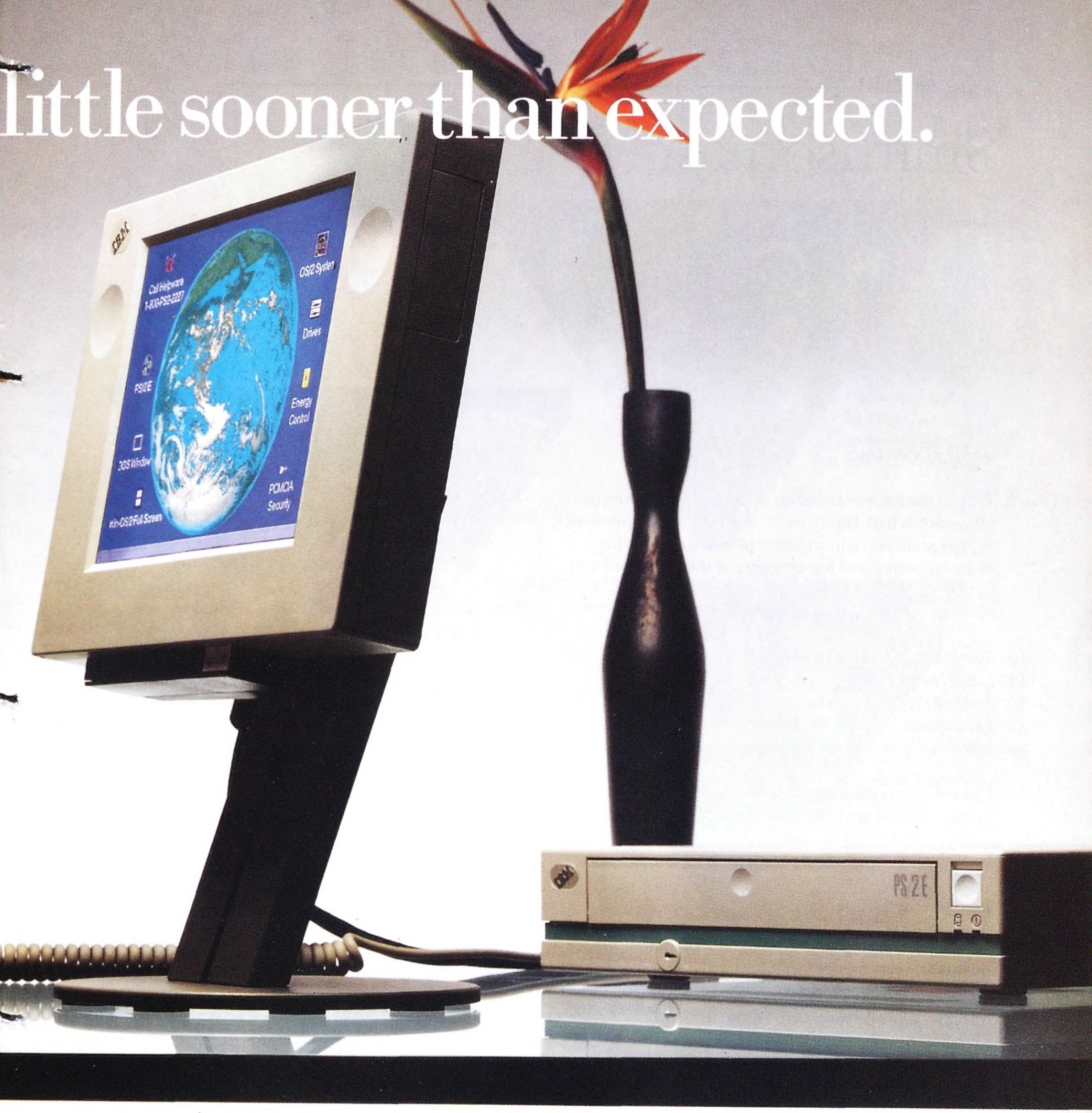
IBM 9507 Color Monitor (active matrix TFT) is initially available in limited quantities. IBM, PS/2, Quiet and HelpCenter are registered trademarks and TrackPoint II is a trademark of International Business Machines Corporation. © 1993 IBM Corp.

little sooner than expected.



Use it with existing applications and networks. Or as a stand-alone. Either way, it's in a class by itself. Can form follow function to truly enlightened design? Absolutely. Just watch PS/2 E lead the way.

Look into the future. Call your IBM marketing representative or the Personal Systems HelpCenter® at 1 800 772-2227 for the IBM authorized dealer nearest you.

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September 1993

Smithsonian

Volume 24, Number 6

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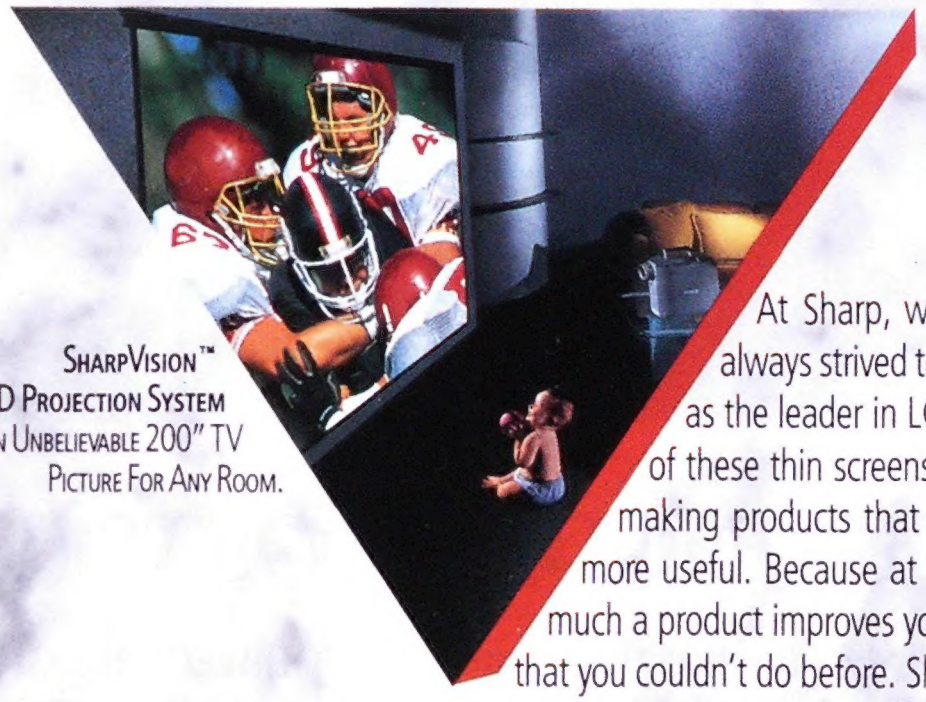

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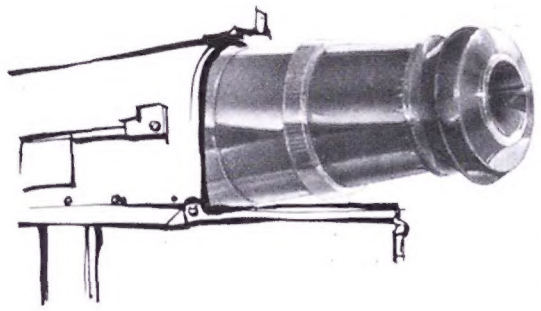

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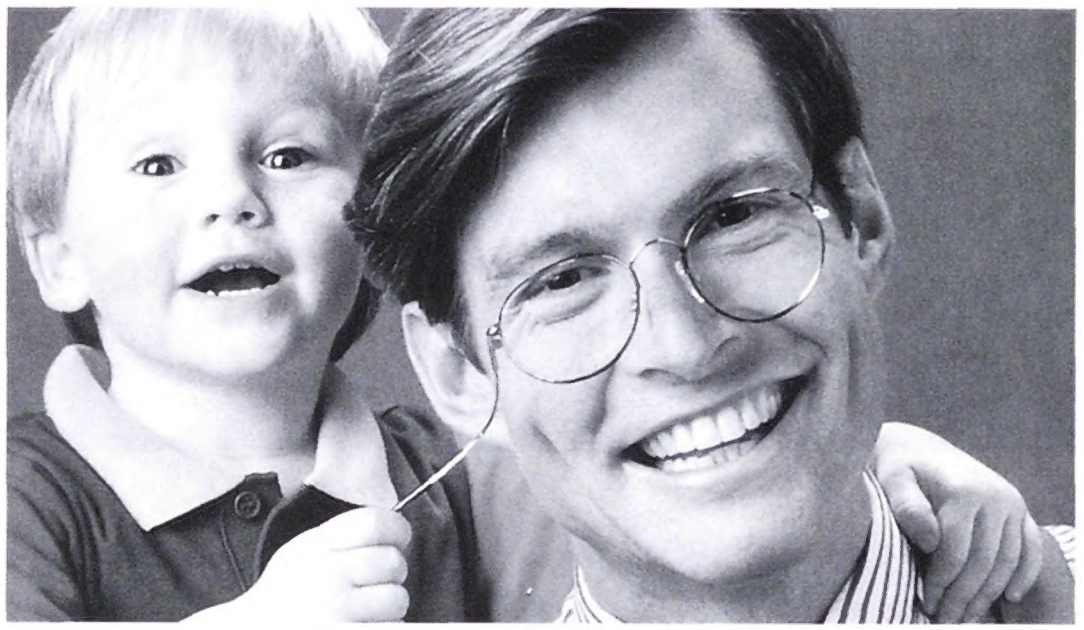

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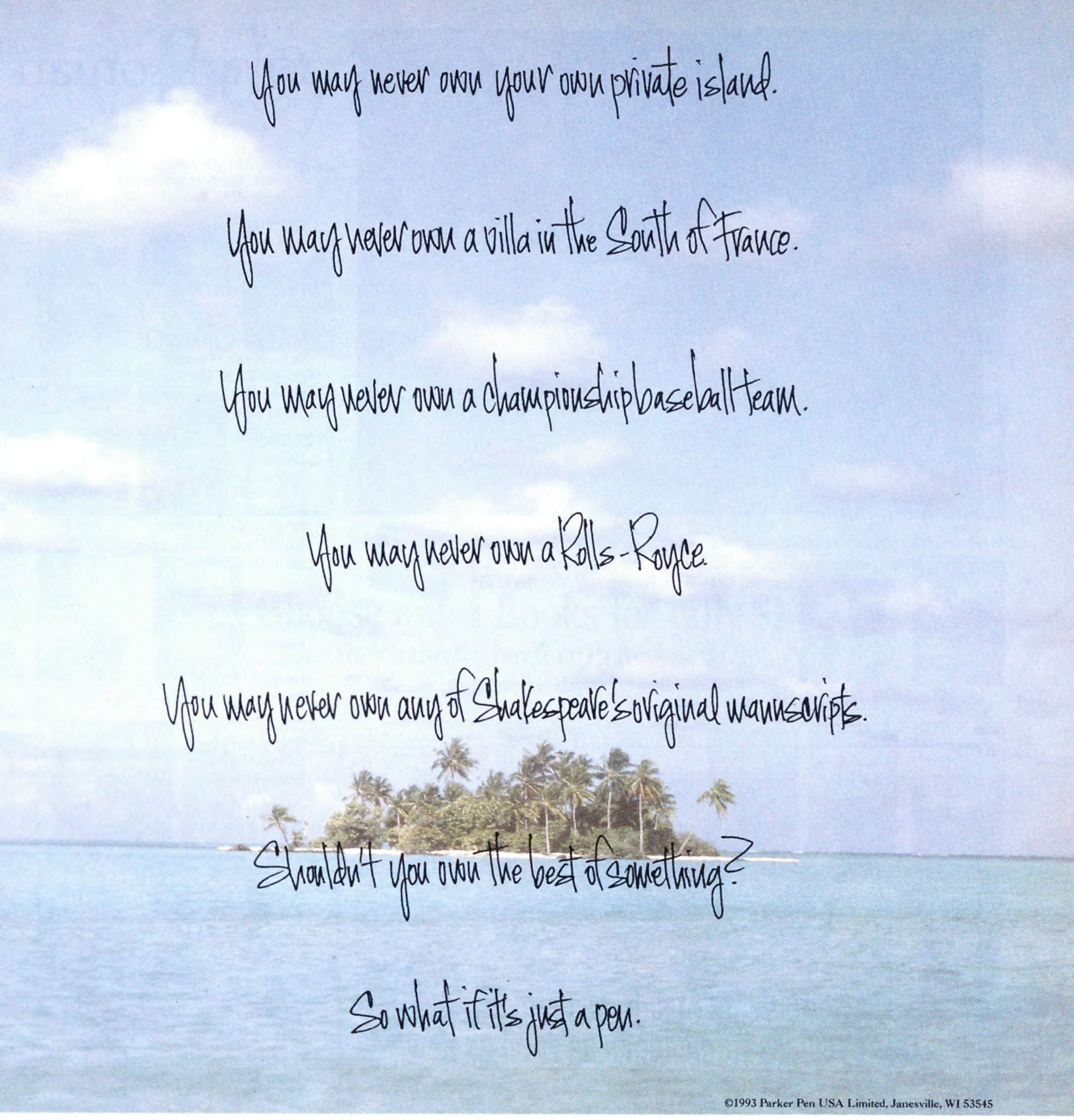

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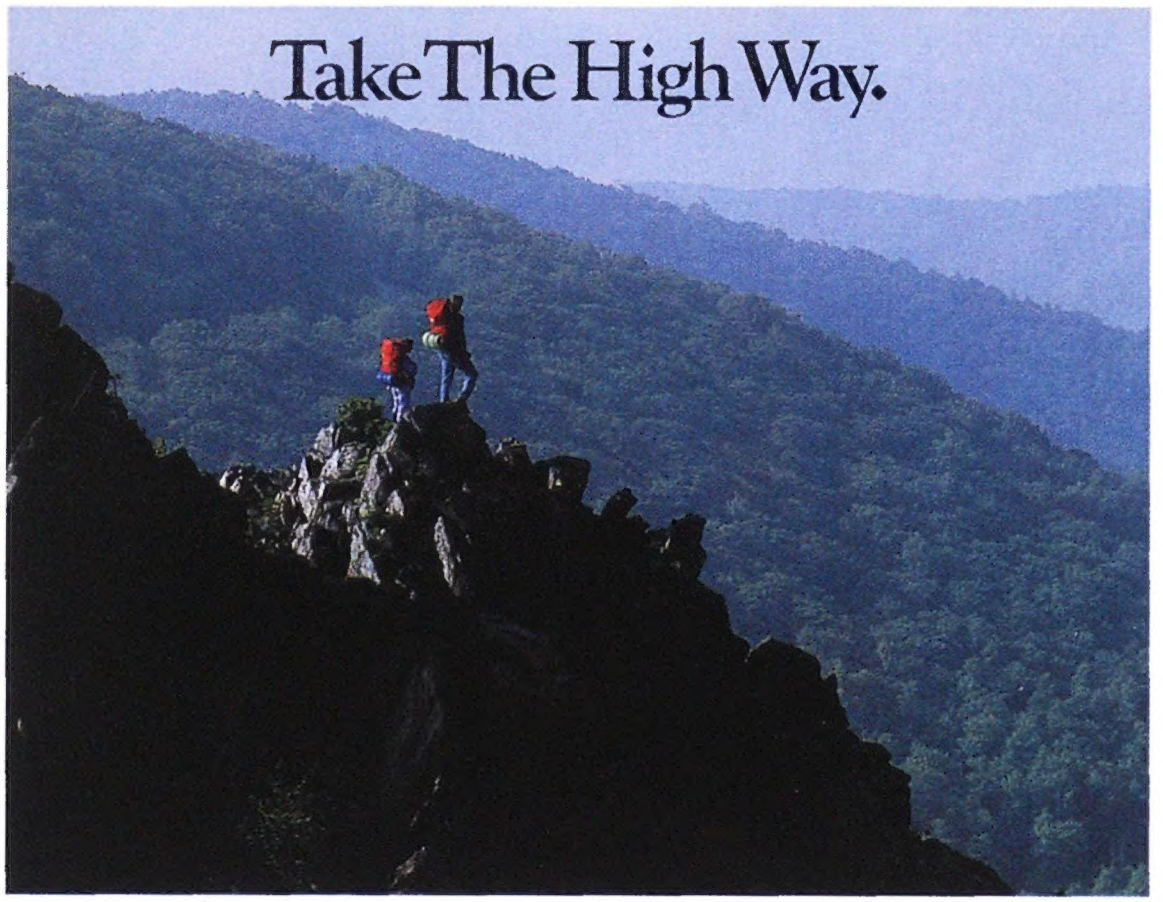

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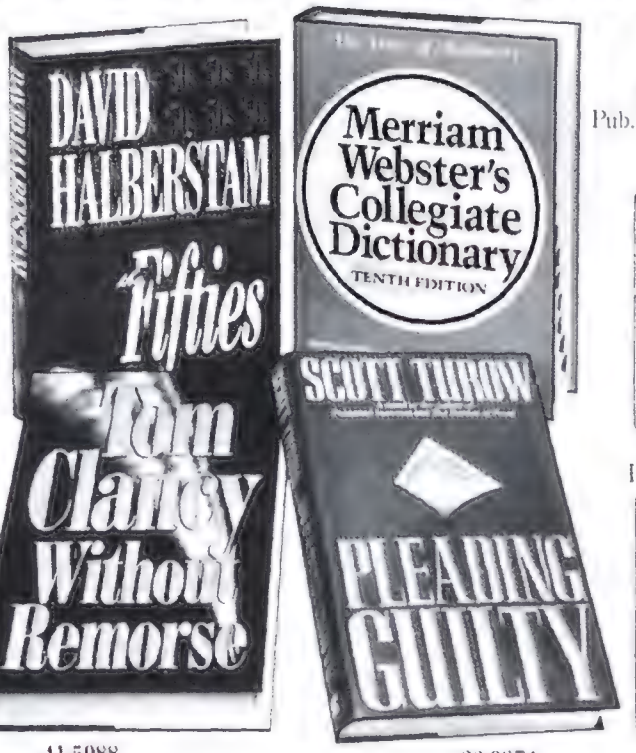

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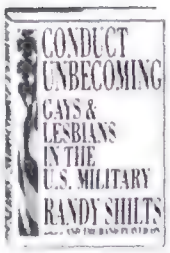

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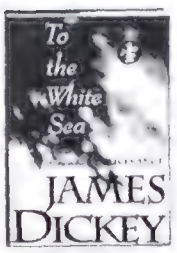

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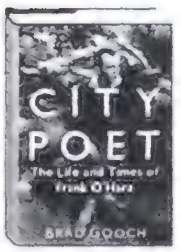

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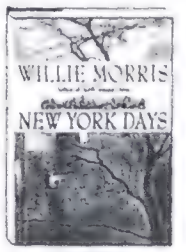

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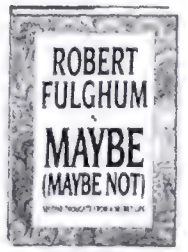

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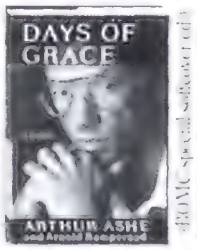

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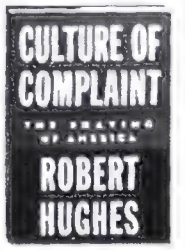

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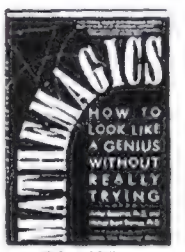

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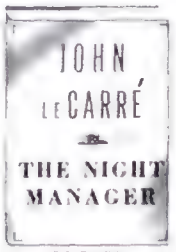

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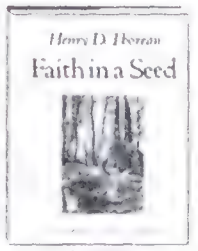

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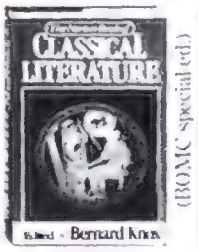

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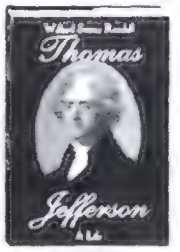

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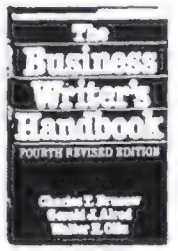

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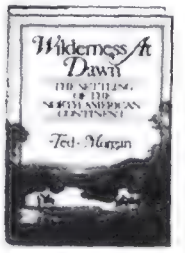

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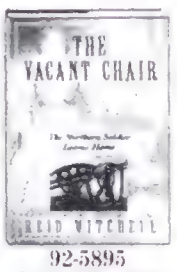

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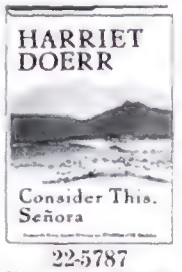

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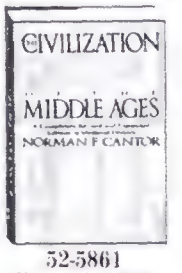

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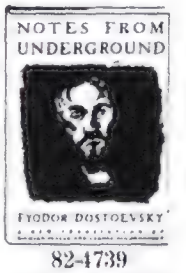

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Secretary Adams' comments

Smithsonian horizons

The long-term goal of sustainability in a global economy elicits a wide range of complex and vital questions

The term "sustainability," once little more than an ill-defined index of generalized worry about increasing environmental strains, has begun to take on more concrete meaning. As a vital first step, a wide gamut of studies is under way on how to expand traditional national-income accounting in order to include measures of nonrenewable resource consumption and other forms of adverse environmental impact. Must monetary values be assigned to everything in order to permit this? If so, how? What do we distort or neglect by insisting on just one accounting system? But if we do not insist, how can the goal of sustainability take its place in national and international planning?

High levels of uncertainty complicate the problem. How large are the potentially recoverable stocks of key resources? Can we take our continuing success for granted in improving recovery methods (perhaps to the point where today's landfills become tomorrow's ore bodies!) or in finding effective, less costly substitutes? While there is still some uncertainty about global warming, what would be its long-range effects on agriculture, health, economic well-being and natural ecosystems? Are there thresholds of depletion beyond which supposedly renewable resources–forests, fish stocks or topsoils, for example–will not renew themselves? How far, ultimately, are we safe in counting on our own and the natural world's capacities for resilience and adaptation to the fairly violent rates of change for which we humans (but especially we in the developed nations) are largely responsible?

Each of these uncertainties (representing many others) uneasily bridges a wide range of possibilities. Scientifically plausible estimates of the consequences are accordingly wide, from trivial to serious. Not unnaturally, existing markets fail to provide an adequate guide to a single best estimate of the values to be assigned to them. How, in fact, can such ranges be assigned monetary values alongside the much more accurately calculated stocks and flows of current national accounts that are limited to the economy? We will never know unless we do the calculations using different values in the reasonable range. Have we any real choice, at least with present analytical capabilities, but to draw back from any approach to permanent sustainability, limiting serious discussion to, at most, two or three generations hence?

The prospect that some of the changes we induce may be irreversible further complicates the goal of sustainability. For all of the pleasurable fantasy evoked by *Jurassic Park*, the unprecedented current rate of loss of species through extinction is certainly one that is irrevocable. At the existing scale of disturbances that human activity entails, and even more so with the greater numbers and higher aspirations that are a certain universal prospect, the threat of irreversible impacts can only grow.

It seems clear that, if sustainability is to be viewed as a realistic goal at all, we cannot leave the natural environment undiminished and inviolate. Substitution is the essential alternative principle. As Nobelist Robert Solow puts it: "A sustainable path for the economy is thus not necessarily one that conserves every single thing or any single thing. . . . What matters is not the particular form that the replacement takes, but only its capacity to produce the things that posterity will enjoy."

The preservation and enhancement of productive potential thus is the underlying objective of policies aiming at sustainability. This may take many forms–capital investment in agricultural improvements and new industries, new technologies aiming at waste and pollution reduction, health improvements that enhance productivity as well as quality of life. Not least important are investments in education–the generation of "human capital." There will always be difficulty in deciding how rapidly a society–or world society, for that matter–is justified in drawing on an existing set of natural resource endowments in order to sustain or enhance other forms of productive potential through the principle of substitution. The outcome, not at all predictable, can only be the product of complex, protracted, multifaceted negotiations, compromises and tradeoffs.

We probably tend to think of sustainability as implying a long-term, *inter*generational concern for maintaining at least our present quality of life. But granting the validity of this perspective, how can it supersede a concern for *intra*generational equity? How can we deny the aspiration of the bulk of humanity, to move beyond its current impoverishment toward standards of living (and attendant resource consumption and pollution generation) that we in the United States and other advanced countries enjoy?

The studies now under way are limited and tentative. But having been launched, the discussion of sustainability will not go away. And with so many questions like these, it is clear that there will be no lack of controversy.

"If you want to grow old as a pilot, you've got to know when to push it, and when to back off." *Chuck Yeager*

Throughout his remarkable career, Chuck Yeager has shown an uncanny talent for what pilots call "pushing the edge of the envelope." At 21, only three years after boarding his first plane, Yeager was leading a squadron of fighter pilots in World War II. And at the age of 24, he became the first person to fly faster than the speed of sound.

Attempting such dangerous feats is one thing. Living to describe them to your grandchildren is another. Displaying the enormous courage, skill and cool judgment needed to do both has made General Chuck Yeager an authentic American hero.

Although retired from the military, Yeager remains a man on the move. He's an avid sportsman with a lifelong love of the outdoors, a lecturer and a consulting test pilot who still loves to fly. "Maybe I don't jump off 15-foot fences anymore," said Yeager, "but I can still pull 8 or 9 G's in a high-performance aircraft." And in all his exploits, Yeager depends on a rugged and reliable timepiece. "I wore a Rolex 40 years ago when I broke the sound barrier and I still do today," says Yeager matter-of-factly. "A pilot has to believe in his equipment. That's why I wear a Rolex."

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Letters to the Editor

Hot rods

Dear Sir: Hot rodding, glorified in your July cover article, is no more than irreversible mutilation of the world's rapidly diminishing supply of historic vehicles. What next, an article on converting 18th-century homes into Dairy Queens?

Buried near the end of the article is a paragraph explaining that only unrestorable wrecks are used for hot rods. If only that were true! Most antique-car restorers have at least one horror story of a wonderful vintage vehicle being hacked up and lost forever. I have a 1928 Dodge in my garage, rescued at 11:59 from the torch of a hot rodder. The engine and rear end were on their way to the scrap yard when we retrieved them. The vehicle was virtually rust free, having waited in a barn for 38 years for its restoration. Now it is authentically restored, and is a show winner.

John C. Bittence
Hiram, Ohio

Dear Sir: In rural Medina County, Ohio, in the early 1950s, creating hot rods was the Great American Pastime. Young men in their rods would pull up beside my mother's sedate little Belvedere coupe, racing their engines to show off their rumble-bumble glass-pack exhausts, trying to annoy her and impress her two teenage daughters. My 40ish mother would look over at them, smile sweetly and ask, "Wanna drag?"

At first this question produced guffaws and sarcastic remarks: "Yeah, sure, lady." When the light changed and Mom floored it, leaving them to choke on her smoke, they ended up laughing out of the other side of their mouths. The word got around: if you wanted to test your rod's worthiness, look for that little bronze-and-tan Belvedere, driven by a middle-aged woman.

A few years ago, Mother, now 79, had had enough of big luxury sedans and bought herself a sporty Oldsmobile Toronado, complete with sun roof and cellular phone. At heart she is still that 40ish "drag-race queen" with the hottest rod in Medina County.

Merry Jayne McMichael
Sandy Springs, Georgia

Dear Sir: This article brought to mind hopped-up Model Ts with Frontenac cylinder heads, Ruckstell axles and differentials, Chevrolets with milled-down heads, and roadster bodies cut down to leave only the shell and seat.

Dry-lake racing at Muroc in the Mojave Desert started in the early 1930s with one-on-one challenges; cars went in all directions, resulting in collisions. Then Gilmore Oil took over, giving some organization to timed match races.

I have fond memories of Roscoe Turner flying up to land at Muroc in a Lockheed Vega MailWing, wearing his usual garb of helmet, goggles, leather coat, flying boots, always accompanied by a small lion on a leash.

M. W. Schneider
Carlsbad, California

Earthworms

Dear Sir: Whenever my father planned to go fishing during the Depression, he would instruct us at breakfast to thoroughly sprinkle the front lawn.

As soon as it was dark, equipped with flashlights and tin cans, the entire family went hunting night crawlers. It took a clever hand to attract the crawlers by holding the light just so, and an even quicker one to capture them.

Anything over the quota of 25 belonged to the hunter (we had standing orders from other anglers). The going rate was a penny a worm or 10 cents for a dozen.

Except for the money and those delicious fish dinners and breakfasts, we teens felt that the whole operation was most demeaning.

Janet Flower
Portland, Oregon

Dear Sir: A neighbor, Linda Heitman, caught our 3-year-old granddaughter Cara's encounter with an earthworm when Cara visited us in June [above]. We had so much rain this past spring

that the earthworms grew to look like small snakes!

Rosalind Vogel
Cape Girardeau, Missouri

Dear Sir: I make my living as a full-time, year-round mole trapper. On many occasions I have noticed worms literally going ballistic as they sensed the vibrations from the moles' tunneling. In a graveyard recently, I observed a dozen worms leaping out of the way as the moles' tunnel got within five or six inches of them. Those farthest from the mole wriggled off through the grass, but those closest to the vibrations lay motionless atop the newly constructed tunnel. The mole cannot capture worms easily aboveground, but by constructing tunnels through areas with large worm populations, it makes its own trap. Worms will eventually reenter the soil when the mole departs the new tunnel. And the next time it patrols the tunnel the mole will find them.

Thomas Schmidt
Cincinnati

Anti-Graffiti Network

Dear Sir: The Philadelphia murals share a common thread with some in El Paso. Both represent issues and concerns felt by residents of the neighborhoods, and both have transformed blank or scarred walls into things of beauty, valued and appreciated by residents and tourists

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alike. There are more than 100 throughout El Paso, influenced and inspired by the great Mexican masters: Rivera, Orozco and Siqueiros.

El Paso's murals reflect Mexican-American history, culture and heritage. Intended for the Hispanic people of the barrio, they are painted by artists who grew up there and are concerned with issues and problems facing that community today: education, jobs, poverty, homelessness, AIDS and so on.

Paul Hoylen jr.
Deming, New Mexico

Bass fishing

Dear Sir: Your article is shockingly biased toward commercial exploitation, a sharp departure from your usual conservation bent. There are many arguments for decommercializing stripers.

For one thing, kissing off the recreational fishing industry as a mere "hobby" compared to a "way of life" certainly is news to the thousands of people whose jobs are related to sportfishing.

But the line that had me tossing and turning at 3 A.M. was the declaration that baymen will "challenge any new law that deprives them of the right to catch and sell the same fish that sportsmen are allowed to catch and keep."

No one has any "right" to take our commonly owned or managed wild animals in great quantities while the man on the beach is limited to a single fish or two. Moreover, the privilege of marketing these animals is subject to restrictions or prohibition when their populations decline, or when there is a more valuable use to society as a whole.

Karl Wickstrom, Chairman
Save Our Sealife Committee
Miami

Dear Sir: In the heyday of stripers, few baymen made a living at haul-seining stripers; all that I knew had other jobs. They just spoiled the surf casting, and when less-than-16-inch fish were illegal to us "sporties," the baymen killed quite a ton of them.

Alan E. Marks
Jerome, Idaho

Around the Mall and beyond

Dear Sir: The Freer may have its captive peacocks, but for some time a group of those royal birds have been feral visitors to our property. Our Sylvia and her offspring have long since departed, either at the whim of nature or an irate local. The two remaining fellows spend their time sitting on snags, watching the shipping on the Strait of Juan de Fuca, trying to ambulate up the street in a 40-knot wind, having nose-to-beak conversations with a young deer or enduring an occasional 10-degree cold snap.

Their curiosity is insatiable. For hours they watch us working outside, then snooze by the glass door when we go in. Their "soul in hell" scream is only one of several vocalizations, others being a donkeylike hee-haw and a turkeylike gobble when startled.

Shirley R. Honoré
Port Angeles, Washington

Dear Sir: Reading Ted Park's comments about Old Glory made me recall the summer of 1953, when we toured Europe with our three teenage children. European families on vacation were identifying their nationality by flying small flags attached to their radio aerials. Driving a rented car, we felt we should fly our national banner. We searched in vain for an American flag until we finally found one in Switzerland–with 57 stars and 15 stripes, but who was counting?

Marjorie L. Smith
Atlanta

Talk radio

Dear Sir: Bruce Watson's essay appalled me. If we citizens of the United States wish to discuss openly, over the air, *any* subject, that privilege is ours.

Joyce E. Murphy
Temple, Texas

Dear Sir: Talk shows can serve the democratic process. Ray Brown's *Wake Up Call*, aired locally, made our citizens aware of a "done deal" toll bridge with acres of cement ramps and toll plazas that would have ruined Fort Walton Beach, Florida. Letters in the *Northwest Florida Daily News* and subsequent editorials heightened the debate. Citizens discussed, examined the facts and defeated by 85 percent the proposal of the bureaucratically sanctioned, state-budgeted Bridge Authority. Our county commissioners resolved to disestablish the Authority. We now feel in control of our community's destiny and fortunate to live in a place that allows callers to discuss issues on our talk show, in a give-and-take dialogue.

William T. Dillon
Shalimar, Florida

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Stephen A. Delfs

Steve Delfs
Forester

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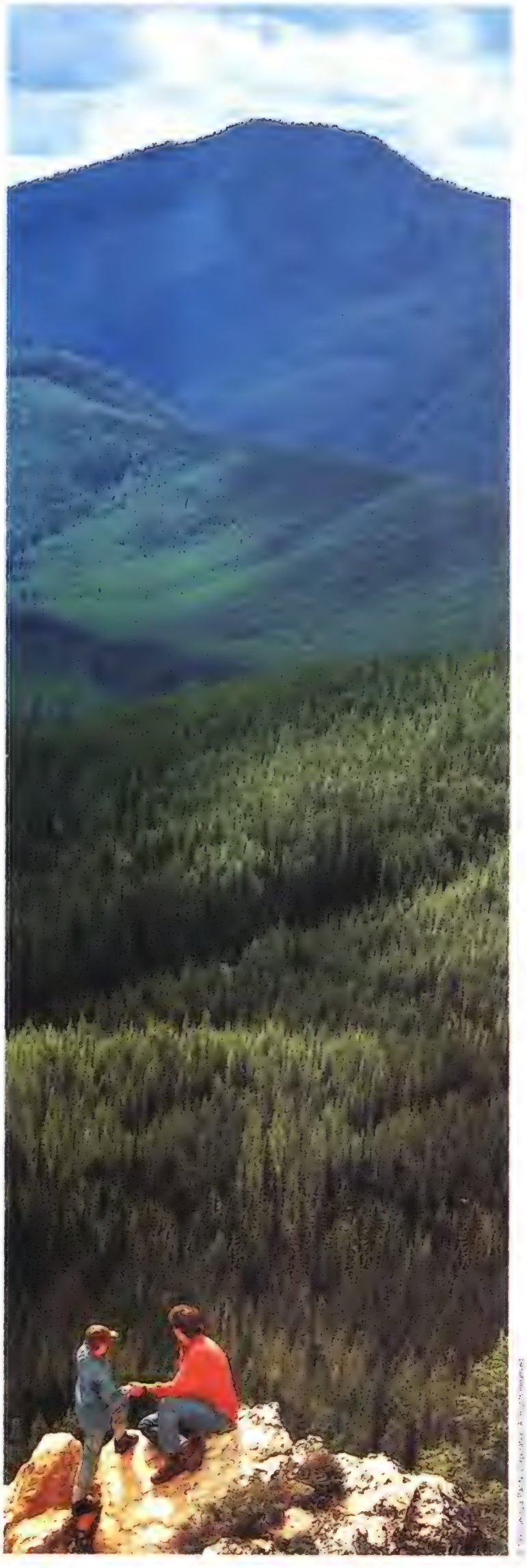

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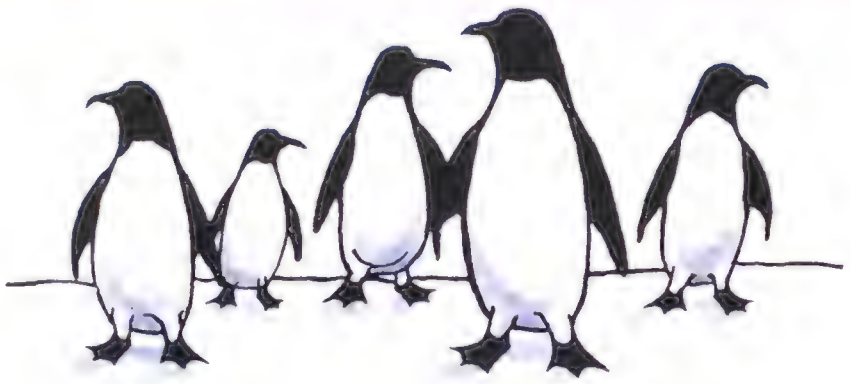

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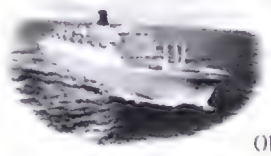

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Around the Mall and beyond

It took a visionary enthusiast like Larry Ross to turn a rickety old cabin back into a crate of dreams

The late Paul Garber, curator nonpareil of Smithsonian aviation matters, used to say that he beat Charles Lindbergh across the Atlantic in 1927 with a cabled message asking for his plane. Of course it was a shot in the dark, but Lindbergh made it, and so did the Smithsonian–with a string attached. We'd get the *Spirit of St. Louis* all right, agreed Lindbergh, but only after he'd flown it around on a goodwill trip. That's why, when you see it at the National Air and Space Museum, you will notice that its nose section is covered with all those little flags of Pan-American nations.

Getting the *Spirit* back across the Atlantic, though, required a couple of boxes, one for the wings, one for the fuselage. The latter had to be about 28 feet long by some 12 feet wide by 9 feet or so high–just the right size for a small cabin. And that's exactly what it became. I've just returned from visiting it and can report that after 66 years the old packing crate is doing just fine.

It's a little museum now, a repository for a mass of Lindbergh memorabilia–letters about his trip, souvenirs, anecdotes from oldsters who remember the epochal flight from New York to Paris, old songs, scraps of old film.

The curator of this collection is a Paul Garber in his own right–a blazing enthusiast and wide-eyed idealist named Larry Ross. Every kid anywhere near Canaan, Maine, will tell you about him, for he's had them all come and visit his Lindbergh Crate. He encourages them to touch a wonderful moment in the past.

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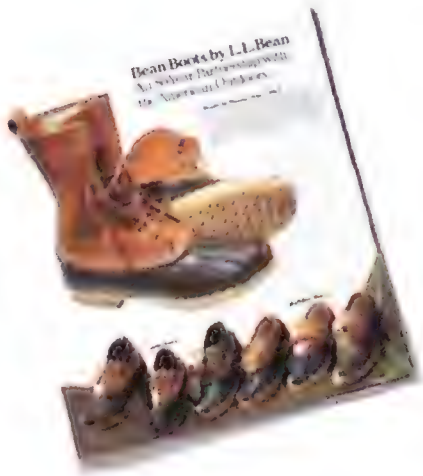

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For trip home on the *Memphis*, fuselage of Lindbergh's plane was put in a crate big enough to convert to a cabin.

Larry Ross rescued the crate-cabin from ruin a few years ago and made it into a museum honoring "Lucky Lindy."

He tells them that having dreams is splendid, and that making them come true is even better.

On May 21, 1992, the 65th anniversary of Lindbergh's famous flight, Larry Ross put on a mini-festival at his Canaan home, where the crate stands. It was such a success that he repeated the commemoration this May and drew maybe 300 or 400 people—myself among them. Larry, his wife, Rebecca, and their two daughters live on 14 lovely hillside acres along a blacktop road running north out of town. Its name is Easy Street, but you'd never know it because someone is always stealing the sign.

I met Larry—slender, vigorous, 40ish, with dark hair, blue eyes and a close-trimmed, pepper-and-salt beard running around his jaw in a style as Yankee as his accent—and he welcomed me enthusiastically. Everything he does is enthusiastic.

Larry came originally from Massachusetts, the son of an engineer who flew transports across the Himalayas ("over the Hump") in World War II. He's a Tufts graduate, an instinctive teacher

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whose love of humanity brought him to central Maine to help administer Sebasticook Farms, an agency that helps adults with developmental disabilities.

He led me around the corner of a barn with a huge "NX211" on the roof, readable 2,000 feet in the air. It rang a bell–I'd seen it on the wing of the *Spirit of St. Louis* back at the Smithsonian. The plane's registration number.

A path stretched to the door of a small cabin with a porch at each end. A flag fluttered overhead. This was it–the Lindbergh Crate, painted about the same shade of gray as the old *Spirit* itself.

We walked through–about three steps–past neatly arranged display shelves and tables, past dark-stained walls where photographs, signs, news headlines and sheet music trapped the eye. Another door opened onto the back porch. We faced the flagpole, a commemorative granite slab and then miles of serene countryside in the fresh green of May.

"We're looking toward Paris," Larry said. Not Paris, Maine; Paris, France.

But France isn't the birthplace of the crate. After Lindbergh arrived there he at last caught up on his sleep (he wrote that by the time he went to bed he'd gone 63 hours without it!). Then the two of them, Lindbergh and the *Spirit*, flew to Brussels, London and finally Gosport, near Southampton. It was there that the Royal Air Force crated the little single-engine Ryan and loaded it aboard the U.S. cruiser *Memphis*, which President Calvin Coolidge had dispatched to bring the hero home.

"Lindbergh had promised the French that he'd begin his trip home from their country," said Larry, "so the RAF lent him a plane to fly back to France, and the *Memphis* picked him up at Cherbourg. He was reunited with his own plane aboard the cruiser."

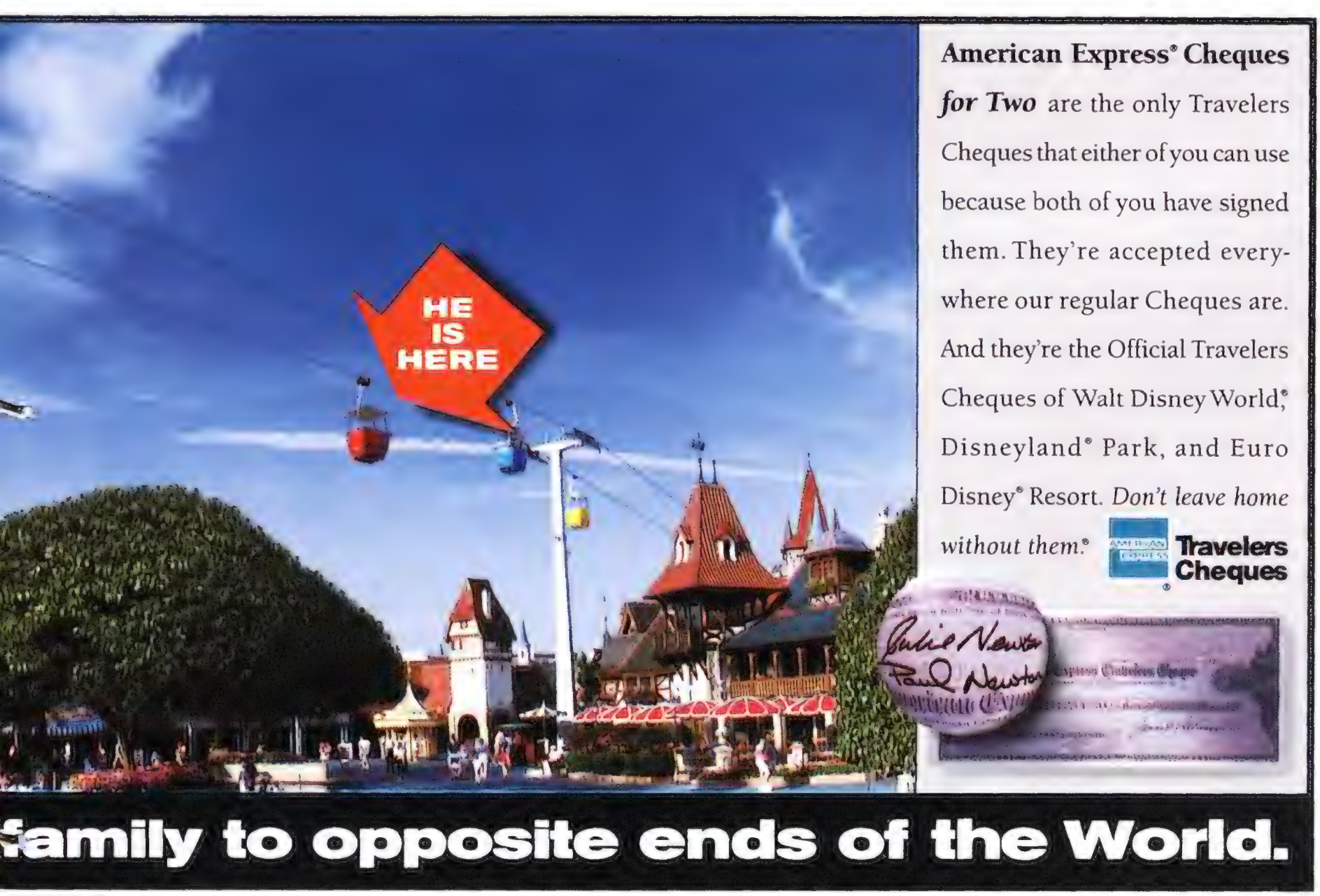
Thanks to Paul Garber, the *Spirit of St. Louis* was slated for immortality at the Smithsonian. But Vice Adm. Guy Burrage, Lindbergh's official escort on the voyage home, had another idea for the crates that held the plane: the larger one would become a small cabin for his summer place in New Hampshire. Lindbergh agreed, and Burrage shipped both boxes to Contoocook, just west of Concord.

They were well made, those packing cases. Burrage had the large one rebuilt, inside out, to make best use of its pine finish. As I poked around inside, I came upon its outside latches. Carpenters sheathed the outside–"England's pine covered by New England's," said Larry–to provide a double siding. Admiral Burrage added doors, windows and a back porch. His workers cannibalized the smaller crate.

For years the Burrage family used "the shack," as they called it, as a guest house. A grandson remembers that as small children he and his sister were stashed there when they visited. But the Admiral died in 1954, and over the next 35 years the cabin went to pot.

Then one day Larry happened to catch a squib in a newspaper saying it was for sale. He drove over to New Hampshire to see it. "Only a person of vision would even look at it twice," he said to himself, innocently unaware that he would become that person.

On his second trip to New Hampshire, Larry suffered one of his chronic spasms of wild enthusiasm and coughed up three thousand bucks for the crumbling shack. Enlisting a friend, Bernie Chadbourne, Larry got it out of the woods with the aid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of a backhoe, hoisted it onto a flatbed truck and trundled it home to Easy Street in the land of Canaan. "A toll collector told me it was the biggest outhouse ever to come down the pike," Larry recalled.

That was March 1990. Since then, the Lindbergh Crate has worked a sort of magic on Larry Ross and those who know and love him. Obsessed with all it stood for, he advertised for memories of the world's shyest hero, of his flight, of his silver plane, of the voyage aboard the *Memphis*.

He got many answers. A Massachusetts woman wrote that she was in Paris when Lindbergh landed, and described how some French fliers may have saved both Lindbergh and his plane from the lunging crowd. A tall reporter "was hoisted onto their shoulders, they shouted and the real Lindbergh . . . was spirited through the mob. . . ."

Other letters came–from astronaut Alan Shepard; from a member of the UFO (United Flying Octogenarians) who had watched Lindbergh's takeoff; from André Gross who went to Le Bourget to watch him arrive. When the crowd rushed toward the plane, young Gross was swept along, carrying his bike over his head, and he shows up in the newsreel footage of the momentous landing.

I looked at a gate pass that would have allowed me aboard the *Memphis* when it eased into Washington's Navy Yard on June 11, 1927. I was shown the remembrances of one of Lindbergh's fellow aviation cadets, who became a minister.

Larry tells of an airline pilot, Frank McColgin, who wrote of growing up in Oklahoma with Lindbergh's picture pasted above his bed. "He learned to fly, was a pilot in World War II, then joined Pan American. On a transatlantic trip he found he had Lindbergh, a Pan Am director, as a passenger. He asked him up to the flight deck, and they flew the Atlantic together. 'Charles Lindbergh was my copilot,' he wrote. I tell the kids about McColgin: that he had a dream–to become a pilot like Lindbergh–and that he worked for it and made it happen."

That's the idea Ross gets across to third- and fourth-graders who make regular school visits to the crate. "I tell them that Lindbergh had a vision, made a plan, formed a team and stayed in focus. And I ask them to write down their dreams and start working on their plans."

I saw some of the papers he's elicited from youngsters wanting to be a ballerina, a truck driver, a lawyer, a dog lover, a pro football player (he insists on playing for the San Francisco 49ers). "I think I'll be a cop," said one lad, "and I would sky dive and fly. I'll be married with two kids and live in Pittsfield on the airport." One girl opted to be a chiropractor "and adjust people when their spinal cords get out of whack. I'll live in Biddeford, and will have a cat and a dog." Larry inspires the young enthusiasms, and his little museum backs him up with its reminders of what such dreams can lead to.

Looking for a *Memphis* veteran, Larry was told to find an old sailor called Deacon Wynn, who'd served on her for 20 years and would surely remember Lindbergh's voyage home with the crated plane. "I tried every way I could think of to find Wynn. Then one day I was working on the crate when Rebecca came over and said I'd just had a phone call from some guy in Florida. She figured he was some sort of minister. He called himself 'Deacon.'"

Because of that serendipity, Deacon Wynn rated the honor of raising the flag over the crate at 1992's celebration. We all watched him do it again this year, right on schedule. We put down our hot dogs and applauded. Then, after lunch, we gazed at scrapbooks crammed with news photographs while a scratchy phonograph record played the quickly produced and instantly forgettable chorus, ". . . hats off to lucky, plucky Lindy, Eagle of the U.S.A."

Kids wandered in and out of buildings, down to the freshly stocked trout pool, all over the newly mowed lawn and up into the apple trees. We all yelled and waved when a huge Navy plane thundered by, waggling its wings. We all stormed down to a little knoll below the lawn to clamber into the Army National Guard helicopter that landed there, and to swarm around the two parachute jumpers who followed.

An assortment of private planes flew past; Don Lopez of the Air and Space Museum delivered videotaped greetings; Larry named the youngsters who'd won prizes for papers they'd written; I had another root beer and wished people would do this more often.

Well, there's sure to be a repeat festival next year and Larry is hoping to receive more mementos and reminiscences for his museum. In fact, he may have a tiger by the tail–a "brand-new tradition" that will get national TV coverage and big-name appearances and draw thousands to Easy Street.

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Phenomena, comment and notes

When we check the health of a patient called Earth, its vital signs show unexpected progress toward recovery

Mayor Ed Koch, whenever he encountered citizens on the streets of New York, would call out, "How'm I doin'?" The same question arises about Spaceship Earth. We're up to here with rhetoric trying to persuade us that we are killing the planet–or conversely that there's no problem our technicians cannot fix–but how do we really know? In the jargon of science, can we quantify what is going on?

The Worldwatch Institute, a nonprofit group that studies links between the world economy and its environmental support systems, is trying. For a decade now, it has published–via W. W. Norton & Company–the annual *State of the World*, an in-depth look at selected economic-environmental issues. This year's edition includes, for example, the decline of coral reefs around the world and the growing scarcity of water available for agriculture, industry and human consumption. Typically the chapters are long, packed with numbers and heavily footnoted. They are snapshots of where we are. A year ago the Institute began a second approach, one in which the trends are more important than the absolute numbers: Are things getting better or worse? Appropriately entitled *Vital Signs*, this series provides one or two pages of text and then one or more graphs and tables to treat 42 indicators in food and agriculture, energy, atmosphere, global economics, transportation and social trends. Those graphs are the hospital charts that tell at a glance how the patient is doing.

Believe it or not, there is good news.

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The lines on some of those graphs have crawled across the past few years in the desired direction. Child mortality is dropping. So is production of those chlorofluorocarbons (CFCs) that eat holes in the protective layer of ozone in the stratosphere. The use of wind power to generate electricity is rising rapidly. World bicycle production outstrips that of cars by nearly 3 to 1. (In the United States, more than four million commuters now bicycle to work, double the number of seven or eight years ago.)

Other items in this year's edition are not so much good news or bad as they are indicators of turning points in our collective history. World fisheries apparently have reached a plateau–about 100 million tons a year, including the fish caught for animal feed–from which there seems little hope of any further rise. We have reached the limit of the resource. The catch of some species will continue to go up, but for others–those that have been fished out or nearly so–there is nowhere to go but down.

Fishing is the last large-scale, commercial, worldwide industry based on the hunting of wild creatures. It will continue, of course, but the point is, it will no longer grow, no matter how great the demand. The per capita catch of wild-caught fish will drop, and the price will rise. Aquaculture can fill some or all of the gap. At a news conference releasing this year's *Vital Signs*, Institute president Lester R. Brown pointed out that catfish farming in the United States alone produces some 225,000 tons a year.

Coal mining appears also to have reached a plateau, not because we have reached the limits of the resource, or anything like it, but rather because of environmental concerns. The fuel that powered the Industrial Revolution is falling into disfavor. Burning coal not only injects more carbon into the atmosphere than does natural gas or oil for the same amount of energy, but it also adds huge quantities of sulfur and nitrogen oxides. We are at one of those watersheds in human history, invisible at the time, that change the way we live.

In his overview to this year's edition, which he titles "An Age of Discontinuity," Brown led off with really bad news. All three major sources of food–oceanic fisheries, rangelands and croplands–are in trouble, he said. Not only is there not much room for expanding the rangelands that feed most of the world's cattle and sheep, Brown writes, but much of the existing land is being overgrazed, with a corresponding drop in production. Grain and soybeans are required for both fish farming and feedlot beef, but world per capita production of grain is falling. (Catfish farming is the most efficient use. It takes 7 pounds of grain to add 1 pound to a steer, 4 pounds for a pig, about 2 for a chicken and just 1.7 for a catfish.)

The use of wind power for generating electricity has leveled off for the moment in the United States but is rising rapidly in the European Community, which has set a goal of 8,000 megawatts of generating capacity by the year 2005. And in at least one place, we have an example of converting military-production facilities to civilian uses. Kenetech/U.S. Windpower has contracted with a Ukrainian utility to build a 500-megawatt wind farm–which may help that country close one of the reactors at Chernobyl. Parts for the wind turbines will be manufactured by Ukrainian subcontractors that once made, among other things, motors for naval vessels, and machine tools and handling equipment for ballistic missiles.

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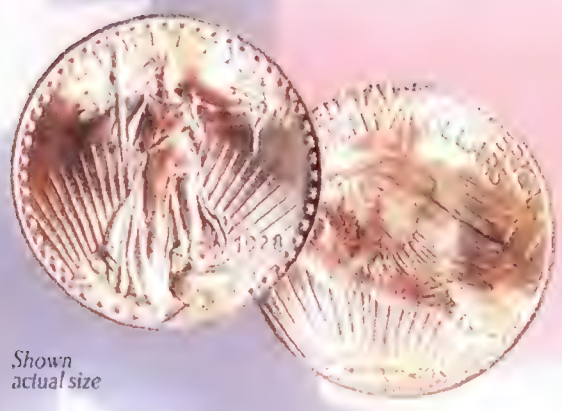

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Commercial fishing (here in the North Atlantic) may have reached its limits.

The turbines will be assembled in a former tank factory.

The installed wind-generator capacity around the world totaled 2,652 megawatts last year, a large number but not quite 1 percent of nuclear-generated electrical power, which in turn is only about 10 percent of the total power generated. Sales of photovoltaic cells, which convert sunlight directly to electricity, continue to rise as well, but the amount of energy generated thereby is still only one-fiftieth of that produced by wind turbines. Compact fluorescent light bulbs, called lamps, which use only a quarter as much electricity and last ten times as long as incandescent bulbs, never struck me as a major factor in energy consumption. But it seems that the 134 million sold in 1992 alone will cut demand by up to 6,000 megawatts, equivalent to the output of half a dozen large power plants. Sales of fluorescent lamps increased 23 percent last year; the line on the graph is rising steeply.

World production of cigarettes appears to have flattened out, despite the best marketing efforts of the tobacco industry. Totals for the past couple of years have been around 5.4 trillion. Because the world population has kept on growing, this means that production per capita is actually dropping—by about 4 percent in that same time period. This is bad news for those who look upon smoking as a

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brake on population growth, but good news for lots of other people. Over and above lost productivity, medical bills imposed on society and all the rest, consider the relatively new issue of secondhand smoke. When the world's smokers light up 5.4 trillion cigarettes a year, they blow a lot of smoke and produce some 375,000 tons of carbon monoxide and 3,000 tons of hydrogen cyanide.

Nicotine addiction is the devil itself, as millions of us can attest. While looking around for more numbers, I found this example in David Krogh's *Smoking: The Artificial Passion*. He quotes an Englishman who spent nearly four years in a prison camp during World War II: "There was . . . a very active market in bartering the handful of rice we received daily for the two cigarettes our hosts so kindly gave us. I have actually seen men die of starvation because they had sold their food for cigarettes." He doubted smokers could be persuaded to quit. But taxes may be able to do what will-power cannot, as we'll see in a moment.

When challenged to tell what real progress has been made since the first Earth Day in 1970, Hal Kane, one of the principal coauthors of *Vital Signs 1993*, put the rise in "carbon efficiency" near the top of his list. This is a measure in constant dollars of Gross World Product achieved per kilogram (2.2 pounds) of carbon emitted to the atmosphere. It has risen from $2.52 in 1970 to $3.22 in 1990. That number apparently dropped a couple of cents in 1991–a setback attributed to the world recession–but the long-term trend seems clear.

Lester Brown added to the success list all the environmental legislation passed since that first Earth Day, including the recent energy, transportation and clean air acts. Now he is looking forward to new taxes on energy and cigarettes. A $2-a-pack tax on cigarettes would raise billions–and cut consumption. In Canada, he points out in the overview, taxes on cigarettes have been raised from 38 cents a pack in 1980 to $3.01 in 1992. In that same period, the number of cigarettes smoked per person has dropped by nearly half. Brown estimates that the saving in medical costs and lost productivity will equal the tax revenue.

There is one more trend, one not covered in *Vital Signs*, that could and perhaps should affect future editions. Those who claim to know tell us that our attention span is dropping. And we're busy, busy, busy. Who has time to look at all those graphs, not to mention actual pages of text? Eventually Worldwatch will have to go the next step. It could lock a gaggle of mathematicians in a hotel room until they figure out a way to combine all the graphs into one. A single line would appear on that chart, moving down as it moves across the white space from left to right (assuming down is bad and up is good–and that no miracles have occurred). Each year another short segment would be added to the line, and the experts would tell us whether the angle of descent has gotten steeper or shallower or stayed the same. (We would need the experts to tell us because one-year changes would probably be subtle.) The graph would appear everywhere, never letting us forget how things are going.

Sometime in the lifetime of my children or their children, if all goes well, the assembled mathematicians will announce to the world that the line has finally leveled off and is horizontal, poised to begin a long, endless climb to a happier, healthier future. And we will all celebrate the first world holiday.

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Smithsonian highlights

Gathering Wild Rice (1972), a watercolor by Chippewa artist Patrick DesJarlait, is in the "Shared Visions" show at the Ripley Center's International Gallery.

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Receive a special free Associates' Planning Packet. Write Smithsonian Information, Smithsonian Institution, Washington, D.C. 20560, or call (202) 357-2700; hearing-impaired service, TTY: (202) 357-1729. *Note:* Parking near Smithsonian museums is limited. Members are encouraged to use the convenient Metrorail subway system, with parking available at some stations (details in packet).

Begin your visit at the Smithsonian Information Center's Associates' Reception Desk–open from 9 A.M. to 4 P.M. daily–in the "Castle."

Extended summer hours

The American History, Natural History and Air and Space museums are operating on extended hours daily from 10 A.M. to 6:30 P.M. through Labor Day, Monday, September 6. Regular hours, 10 A.M. to 5:30 P.M., resume Tuesday, September 7. Extended hours continue at the National Zoological Park for grounds, 8 A.M. to 8 P.M. daily, through October 15; buildings are open year-round from 9 A.M. to 4:30 P.M. daily. Other Smithsonian museums are generally open 10 A.M. to 5:30 P.M. daily.

The Court dining room

The Court dining room, located in the National Museum of Natural History, offers buffet service daily, 11 A.M. to 3 P.M.

National Hispanic Heritage Month

The Smithsonian will celebrate Hispanic Heritage Month from September 15-October 15 with a variety of programs. For information call (202) 357-2700, 9 A.M. to 4 P.M., Monday through Saturday. For 24-hour recording call (202) 357-4574 starting September 13.

Special September exhibits, events

National Portrait Gallery

Contemporary Self-Portraits from the James Goode Collection (through December 5) Exhibit features 25 works from late 1970s and '80s. See *Highlights continued*, page 30.

Brushes with the Literary: Portraits by Washington Artist Marcella Comès Winslow (through December 5) Show presents an insider's view of cultural life in the nation's capital in the 1940s and '50s.

National Museum of American Art

Jacob Kainen (September 10-January 2, 1994) Major retrospective of one of America's foremost colorists. Works range from early expressive cityscapes to recent large-scale abstractions.

The Arvin Gottlieb Collection: Paintings from the American Southwest (September 24-March 20, 1994) Exhibition showcases art of major painters who worked in New Mexico between 1900 and 1940–Kenneth Adams, Joseph Henry Sharp.

Renwick Gallery

American Crafts: The Nation's Collection (runs indefinitely) Selection of works from the permanent collection features 19th- and 20th-century pieces by nationally prominent artists in a variety of craft media–glass, clay, fiber, metal, wood.

Hirshhorn Museum & Sculpture Garden

Jean Dubuffet, 1943-1963: Paintings, Sculptures, Assemblages (through September 12) Exhibition features some 100 works, including portraits, nudes and abstractions, by the renowned French artist.

National Air and Space Museum

A "Blueprint for Space" (through April 1994) Exhibit showcases collection of artworks of space imagery commissioned in the 1950s by *Collier's* magazine.

Where Next, Columbus? New gallery looks ahead to the next 500 years of exploration, examining the scientific, technological, economic, ethical and political issues involved in future space travel.

Tropical Rainforests (opens September 3; 6:45 P.M. on selected evenings) New Imax film focuses on long evolution of the rain forest, its incredible diversity and its recent rapid destruction.

National Museum of American History

Tunnels! (through March 15, 1994) Exhibition, coinciding with 150th anniversary of completion of first successful underwater tunnel, London's Thames, examines how tunnel adaptations have met the needs of growing cities and countries. Show features rare books and manuscripts dating from the Renaissance.

Manufactured Weather (through Novem-

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ber 7) Exhibit looks at the development of heating and cooling technologies in America between 1850 and 1950.

National Postal Museum
The Smithsonian's newest museum, located next to Union Station on Capitol Hill, presents exhibits tracing the history of the nation's mail service. Displays explore topics from the Colonial Post and Pony Express to the art of letter writing and the beauty and lore of stamps.

National Museum of Natural History
O. Orkin Insect Zoo (opens September 10) The insect zoo reopens after extensive renovation, featuring various insect habitats—mangrove, desert, walk-through rain forest—an unusual look at insects in your home and an African termite mound.
Life in the Ancient Seas Permanent exhibition includes a simulation of a 230-million-year-old reef.

National Zoological Park
Amazonia Permanent installation re-creates microcosm of world's largest rain forest and river habitat, explores the wonders of this richly diverse ecosystem.

Freer Gallery of Art
America Meets Asia Newly renovated and reinstalled galleries feature Asian and 19th- and early 20th-century American art, including an important collection of works by James McNeill Whistler.

Arthur M. Sackler Gallery
The Divine Word of Islam (through January 2, 1994) Exhibition of 17 works, dating from the 14th through 18th century includes bound manuscripts of the Koran and books of prayer.
The Golden Age of Sculpture from Sri Lanka (through September 26) Exhibit of 52 ancient masterpieces of bronze casting.

National Museum of African Art
Dreaming the Other World (through November 30) Exhibit examines belief of Baule peoples of central Côte d'Ivoire in mirror-image, or "Other World," mates.
Astonishment and Power: Kongo Minkisi and the Art of Renée Stout (through January 2, 1994) Exhibition explores both the *minkisi* tradition of the Kongo peoples of central Africa and the contemporary art of Renée Stout.

Anacostia Museum
Always There: African-American Presence in American Quilts (through October 17) Exhibition of 19th- and 20th-century quilts, photographs and personal objects.

Fred Freeman's 1950s rendering of Mars-bound winged landing vehicles is at NASM's "Blueprint for Space" exhibition.

Arts and Industries Building Experimental Gallery
Cartoons, Caricatures and Comics (through September 12) Exhibit explores dual function of this longstanding graphic art tradition as both popular and fine art.
Muttonman Discovers Columbus (through September 12) The cartoons of Navajo performance artist Vincent Craig.

International Gallery, S. Dillon Ripley Center
Shared Visions: Native American Painters and Sculptors in the Twentieth Century (through October 3) Exhibition showcases the "best of the best" in Native American art.

Cooper-Hewitt Museum (New York)
Design and Fabric Technology: Pushing the Limits (through September 26) Exhibit examines recent groundbreaking collaborations between artist-designers and fabric producers.

Exhibition catalogs

Catalogs available currently include:
Contemporary Self-Portraits ($2.50 paper)
Brushes with the Literary ($29.95)
American Wicker ($45/$25 paper)
A Blueprint for Space ($60/$24.95 paper)
Shared Visions ($20 paper)

To order, send check or money order to Smithsonian Museum Shops, 8308 Cinder Bed Road, Newington, Virginia 22122. Include 15 percent of purchase to cover postage, handling (minimum, $1.75).

Smithsonian on the air

Smithsonian Presents Invention Series of half-hour television programs explores the spirit of innovation behind invention. Tuesdays at 9 P.M., EST, on the Discovery Channel. Check local cable listings.

To obtain a free listing of Smithsonian home video titles, which includes the *Invention* series, write: Office of Telecommunications, Smithsonian Institution, American History Building, MRC 645, Washington, D.C. 20560.

Smithsonian National Associates

This month the National Associates Program U.S. and International Events comes to Midland, Texas, and Ukiah, California. The Midland program (September 17-19) will feature lectures on folk art, space exploration and oceanic research. In Ukiah (September 23-25), topics will include America's multicultural society and historic preservation.

Associates in Midland and Ukiah will receive invitational brochures. Contact: U.S. and International Events, 490 L'Enfant Plaza, S.W., Suite 4210, Washington, D.C. 20560; (202) 287-3210.

Resident Associate Program

To become a Resident Associate, or for fee and ticket information, call (202) 357-3030. September events include:
Betty Friedan: Bolder and Wiser (September 27; 6 P.M.) The distinguished author discusses misconceptions about aging.
Tony Hillerman's Sacred Clowns (September 22; 6 P.M.) The popular mystery writer discusses his first novel in three years, *Sacred Clowns*.

Smithsonian Institution Traveling Exhibition Service

SITES organizes and circulates exhibitions to cities throughout the United States and abroad. To sponsor a show in your community, write SITES, Smithsonian, Washington, D.C. 20560. Here are some September exhibits:
• Indianapolis, Indiana (September 4-November 28) *The Kids Bridge*, Children's Museum.
• Pittsburgh, Pennsylvania (September 11-October 10) *Paintbrush Diplomacy: Children's Art from the Americas*, University of Pittsburgh.

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Highlights continued

Artists through their own eyes

In 1987 collector and author James Goode, former curator of the Smithsonian Institution "Castle," strolled into a one-man show of paintings by Washington-area artist David Zuccarini. Goode was instantly drawn to the exhibit's sole self-portrait because its arresting and unconventional composition defied his stereotype of such paintings. Thus an unusual and captivating collection was born. "Contemporary Self-Portraits from the James Goode Collection," on view at the National Portrait Gallery through December 5, presents a startling variety of interpretations, techniques, compositions, themes and styles. Always revealing, always surprising, the works range from caricature to photorealism, from the darkly reflective to the openly playful.

"Self-portraits can drive you crazy when you try to live with them," says Goode, who lives with some 100 these days. "They're so psychological–so intense." That, however, along with the fact that no one else seemed to be involved in amassing such a collection of American art, is what initially engaged Goode in this pursuit. He was also intrigued with the idea that the works he sought were by living artists who could tell him something about their paintings. Says Goode, "These portraits have given me a unique opportunity to see the artist through his or her own eyes."

Diane M. Bolz

Symbolism suffuses playful *Self-Portrait with Swelled Head* by Sidney Lawrence.

Burt Silverman depicted self at top left in *Portrait of Harvey Dinnerstein* (detail).

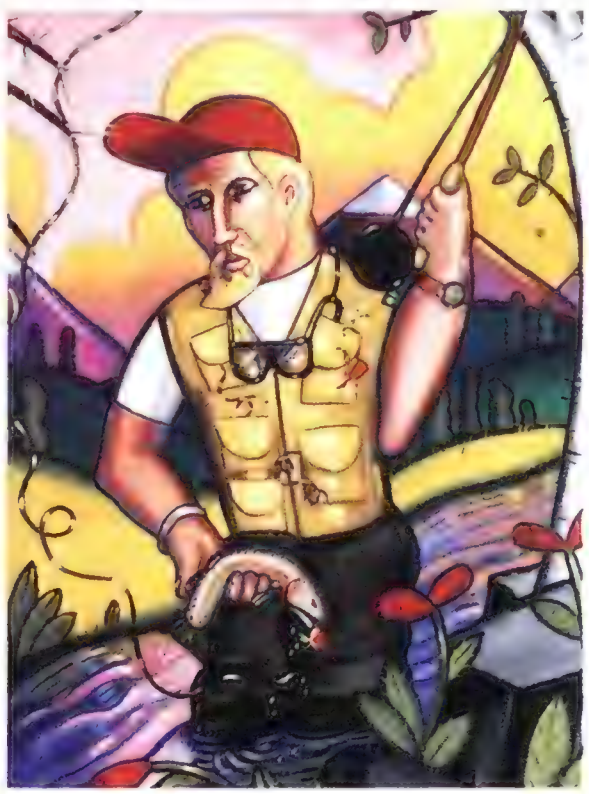
"Reflective, sad" mood of Daniel Sprick's likeness (detail) fascinated Goode.

Jill Mackie's painting shows influence of Northern European Renaissance art.

Christopher Bartlett cast himself as *The Professor of Sculpture* in ceramic bust.

Self-Portrait Ascending (detail) marks end of depression for Rebecca Davenport.

Cartoonlike image (detail) of Richard Thompson is part of a triptych of selves.

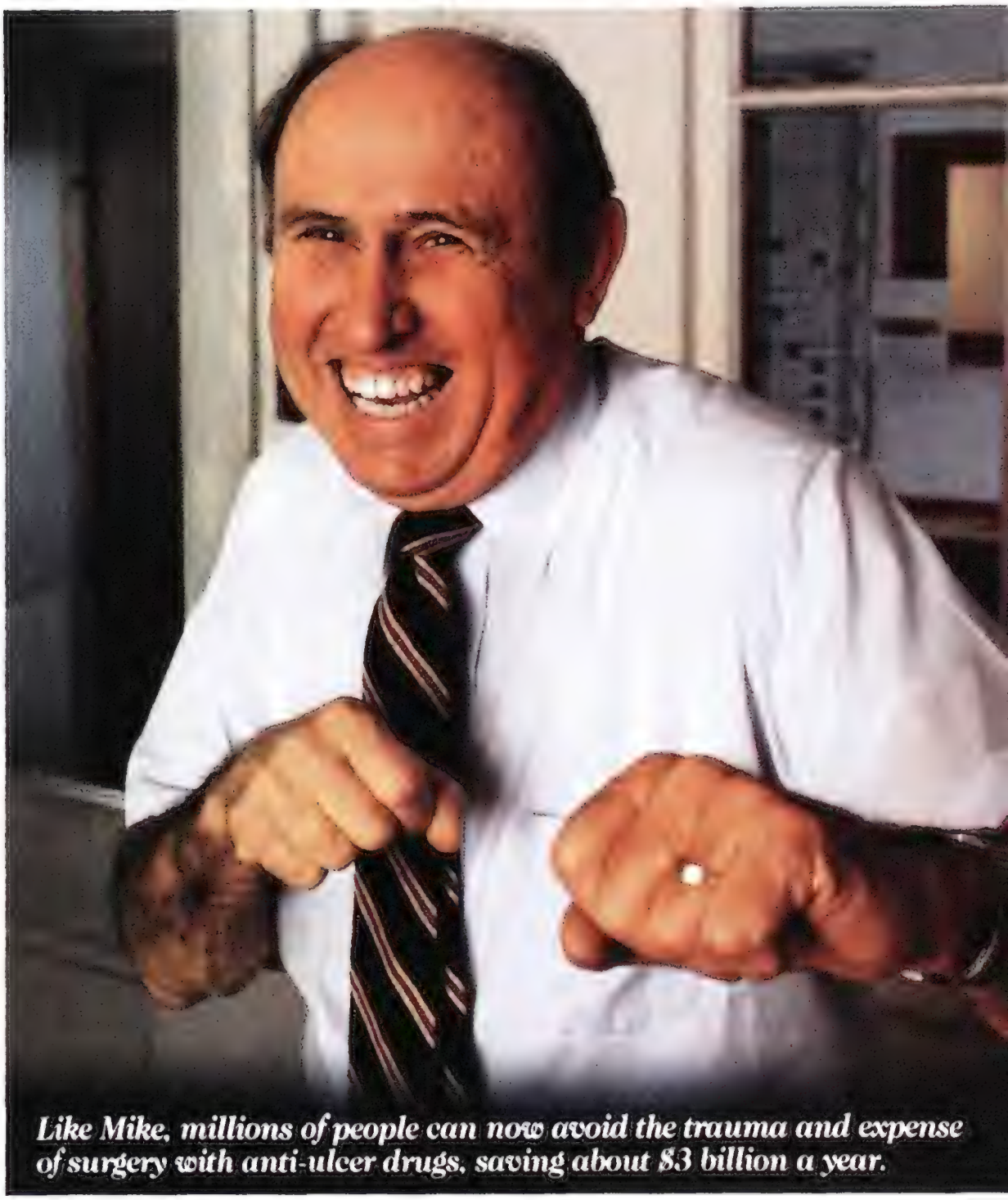


Ask Mike what he'd do if you took away the ulcer drug that's saving him from a $25,000 operation.

When prescription drugs can save ulcer patients like Mike from surgery, obviously it's a good thing. What's not so apparent is how dramatically the same drugs reduce healthcare costs.

In 1976, the year before the introduction of the first modern anti-ulcer drug, there were 155,000 ulcer operations. By 1987, the number had dropped to under 19,000.

And today, while ulcer drug therapy costs a sizable $1,000 a year, it is far less expensive than surgery which averages $25,000, resulting in an estimated savings of $3 billion a year.



Like Mike, millions of people can now avoid the trauma and expense of surgery with anti-ulcer drugs, saving about $3 billion a year.

America's healthcare crisis calls for this kind of cost-saving power. And new prescription drugs are our best hope for providing it.

For further information on how new medicines improve lives and save money, write or call The Pharmaceutical Manufacturers Association, 1100 Fifteenth Street, N.W., Box F, Washington, D.C. 20005. 1-800-538-2692.

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Perhaps the one thing worse than dying is outliving your money.

It may well be your worst fear.

Far more frightening to us, however, is how few people are being told what the future has in store and how to plan for it.

Our purpose in bringing to you the following information isn't to scare you, but merely to help prepare you.

You're probably going to live a lot longer than you think.

Not so long ago, if you were lucky enough to live to retirement age, you'd have very little time left to worry about providing for it.

Today, if you reach the age of 55, and you almost certainly will, the odds are that you'll live until you're 77 years old. And, while the median life span is constantly increasing, the median retirement age is constantly decreasing.

Most people now retire at a little over 60, leaving them with 17 non-working years to provide for. Of course, you could live a lot longer.

To have your birthday announced on NBC's "Today Show," it would help to be 105; there are just too many people celebrating their 100th birthday to mention them all.

Social Security will only pay for a small fraction of your retirement needs.

Despite all the dire predictions, we believe Social Security will be around to help you in some form.

But, you can't let it give you a false sense of security; the current maximum benefit is just $1,088 per month.

If you are fortunate enough to have a company pension plan, this can help too, although on average, it will only account for another 16% of your needs.

There's one other nasty number that will factor into everybody's future: the rate of inflation. For the period 1967–1990, the average rate of inflation was 6.3%, which dwindled the purchasing power of $30,000 held uninvested to just $7,500.

There are also a number of other phenomena to consider that could prove to be a drain on your finances.

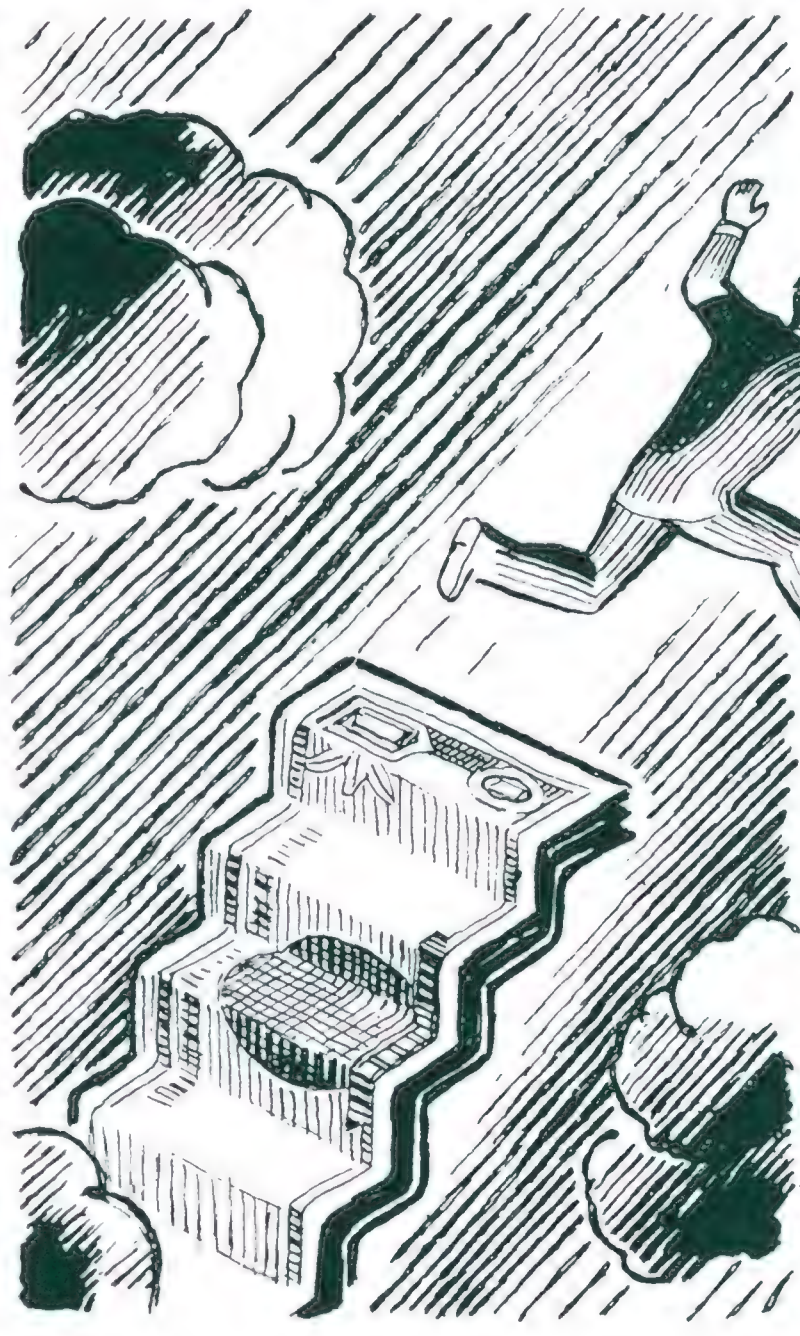
For example, in the future it won't be so unusual for your retired parents to still be alive when you retire.

And if, like a lot of other people, you had children late in life, you could be paying for college at the time people used to save the most for their retirement.

It's not just how much you save, it's how much money your savings earn.

If you've read this far, it should be painfully obvious that you don't need us or any other financial institution to simply tell you to save for your future.

The return for investing wisely can be a much richer retirement.



A few percentage points may not seem like much in the short term, but, as we've already established, you're in this for the long term.

$50,000 returning 8% instead of a paltry 4% would yield $124,000 more over 20 years.

Take advantage of a tax-deferred plan by not only reinvesting the interest, but also the untaxed interest, and you'll see an even bigger return. (The government taxes you enough, don't they?)

A $2,000 annual contribution to an IRA earning 8% will add up to $98,846 over 20 years. In a taxable account it will only accumulate $73,743.*

And what many people think of as the riskiest investment may be your safest bet of all: the stock market.

Over the last 65 years, the *Standard & Poor's* 500 produced an average annual total return of 10.4%.

If it continues to perform in the same way, $50,000 invested with only average success would be worth $361,702 in 20 years, assuming reinvestment of dividends.

Of course, one of the first principles of building your principal is designing a balanced portfolio. This could, for instance, include cash, bonds, moderate and aggressive growth equities, tangible assets and international investments. And your greatest asset will be a financial advisor you can trust.

Your golden years can be truly golden.

At Prudential Securities we don't think you should spend your later life counting loose change. Your objective should be to enjoy retirement, not simply survive it. As such, financial planning is too important to be done by "clipping a coupon" or left to amateurs.

To this end, we have Prudential Securities Branch Offices throughout the country. And if you make an appointment with a Prudential Securities Financial Advisor, he or she will take as long as it takes to get a thorough understanding of your total financial picture.

Only then can we tailor a financial strategy that fits your personal needs, aspirations and security.

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We also have offices in every major financial center around the world, if they can be of any help to you.

Someone said something recently that we think is worth remembering.

A famous actor's parting advice to the world was, "Live every day."

We'd like to add, "And plan to afford to live every day to the fullest."

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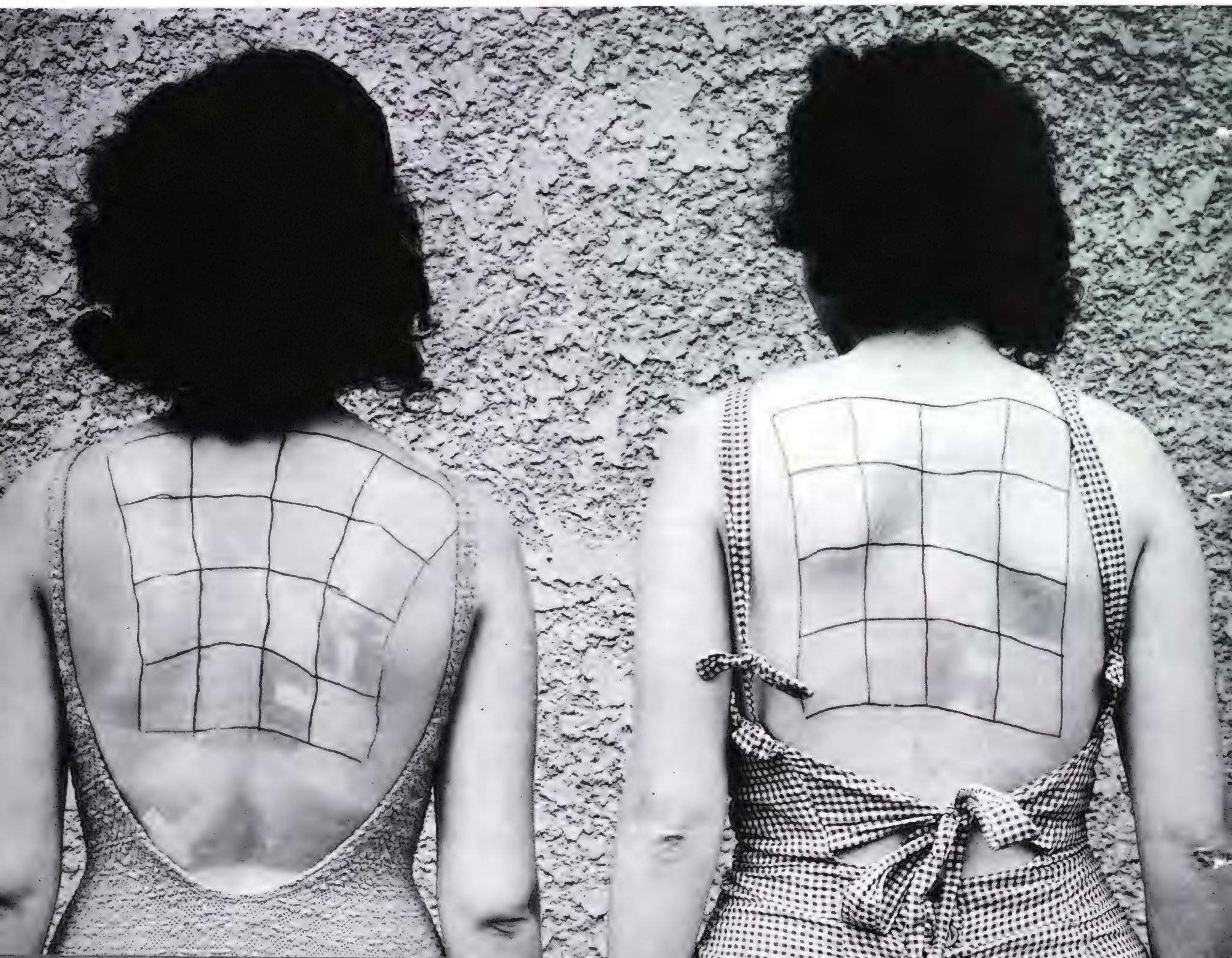
By Doug Stewart

To buy or not to buy, that is the question at *Consumer Reports*

For almost 60 years, it's been the bard of the marketplace, giving us the lowdown on everything from suntan lotions to ovens

Color photographs by Enrico Ferorelli



"Forty." Splash.

"Forty-five." Splash.

In a grimy and very wet warehouse, David Tallman and Bob Solomon are testing lawn sprinklers. To make their test more precise, they've dispensed with using a lawn. Instead, they've covered the pitted concrete floor with 299 graduated cylinders. Glued to the top of each is a wide plastic funnel. Just laying out the grid with a tape measure, string and white paint, they tell me, took several days. Now, having let a cheap rotary sprinkler operate for exactly 30 minutes, Tallman and Solomon are working their way down the rows, picking up cylinders, recording the water levels and dumping them out.

"One twenty-five." Splash.

"One thirty." Splash.

The two men are utterly serious and methodical. There is no small talk. The huge warehouse reminds me of a military cemetery, with Tallman and Solomon the obsessively devoted mourners, trudging up the neat rows with grim precision. They've tested 30 models so far. Nearly 40 others await their turn.

These patient testers work for Consumers Union, the nonprofit product-testing organization whose headquarters is just down the road here in Yonkers, New York. If a particular brand of sprinkler will leave puddles in the middle of your lawn, if another will leave dry spots at the corners, Tallman and Solomon pass the information on to their editorial counterparts at *Consumer Reports.*

The magazine is CU's raison d'être, and its mission can be summed up by CU's motto: Test, Inform, Protect. With more than five million subscribers, most of them middle-class and middle-aged, and with several times that many borrowers, as dog-eared library copies can attest, *Consumer Reports* is one of the nation's most popular magazines, easily surpassing *Time*, *Newsweek* and *Playboy*. It's also one of the most influential. In 1988, when its car testers rated Suzuki's topple-prone Samurai as "not acceptable"—meaning, don't even take it as a gift—sales plunged 70 percent the following month. Last year, when it raved about Saucony's Jazz 3000 sneaker, sales doubled, leading to nationwide shortages.

The monthly's stated purpose, in addition to offering buying advice, is "to maintain and enhance the quality of life for consumers." To Consumers Union, those are fighting words. Though its magazine's image in the minds of nonreaders may be that of a deadly-dull shopper's guide to major household appliances ("What Dr. Spock is to freshman parents, the Consumers Union is to bewildered housewives," a *New York Times* writer observed back in 1959), it does a lot more than rate cars and refrigerators. In recent issues, it has looked at mutual funds, prostate surgery, home mortgages, retirement communities and public health policies. In the 1930s, Consumers Union was one of the first organizations to urge a boycott of products imported from Nazi Germany, and it's been calling for nationalized health care since 1937. In the 1950s it warned the nation that fallout from nuclear tests was contaminating milk supplies. In the 1960s and '70s it prodded carmakers to install seat belts, then air bags.

With her bowl of odious Monster Mash, staffer Mary Tobias puts self-cleaning ovens through their paces.

Yet the magazine is rarely strident. It can even be funny. Its very first issue in 1936 noted that Lifebuoy soap was itself so smelly that it simply overwhelmed your B.O. with L.O. And what reader didn't delight to find in a 1990 survey of soaps that the most expensive bar, Eau de Gucci at 31 cents per hand-washing, wound up dead last in a blind test? Poetic justice in an eight-point chart.

Consumer Reports' readers clearly appreciate such monthly revelations. It's unlikely any other magazine in the world could have raised $17 million toward building a new headquarters by asking readers for donations (but please, nothing more than $5,000 a head). The result is a spacious and sunny new building in suburban Yonkers

Using commonsense science, testers applied suntan lotions in grids to volunteers' backs for 1940 report.

So that your lawn may be green, David Tallman (right) and Ralph Petrucelli monitor sprinkler performance.

that contains both offices and 42 testing laboratories. Here the organization produces not only *Consumer Reports* but also television specials, consumer-related books, health and travel newsletters, and a children's magazine called *Zillions*. CU does no consulting to industry and accepts no advertising, the better to avoid even the appearance of bias.

In her corner office, CU's flinty, quiet-talking executive director, Rhoda Karpatkin, explains its no-ads, no-freebies policy. "Magazine readers aren't stupid," she says. "If you know the travel writer for the travel magazine you read gets free trips, who do you think that writer is working for? For you? Or for whoever pays for the trip?" The American public is increasingly cynical about once-trusted institutions, from Congress to public schools, she says. "We're one of the few institutions around that people still trust."

To avoid even the appearance of bias in fulfilling its task, CU buys all its product samples on the open market, and anonymously. In an office close by the company's loading docks, Ann Durney supervises a far-flung network of nearly 100 undercover shoppers, mostly retirees and housewives. If a frozen-food test is scheduled, she tells me, the shoppers unload the specified brand of chopped spinach directly from their shopping carts into shipping containers in their cars packed with dry ice, whereupon the food is sent overnight to Yonkers.

Unmarked vans and 100-dollar bills

For big-ticket items, a half-dozen able-bodied shoppers operate a fleet of unmarked vans out of Yonkers. "We give them 100-dollar bills," Durney says. The shoppers are a burly lot because having a store deliver a washing machine direct to Yonkers is taboo. A store could get wise and spiff up the sample. "So they have to pick it up. They tell the store people they have a house upstate," Durney says. Yes, she concedes, the job requires telling little white lies. "We're all eventually going to hell here."

But understand, Saint Peter, they lie that they may tell the truth. Exploring the maze of labs in the building, I see evidence everywhere of the thoroughness with which CU personnel carry out their mission. I watch a chemist perform a cholesterol extraction test on a small white blob in a beaker: a ground-up piece of turkey enchilada, he tells me. I see the remains of a piston-driven machine called Fingers that added 1 + 1 on pocket calculators hundreds of thousands of times or until the calculators failed, whichever came first. I watch carry-on garment bags bang into one another inside a huge contraption that looks like an eight-foot-wide clothes dryer.

Down the hall in the appliance department, a pair of "food soilers" will soon load 20 dishwashers with an identical set of 60 dirty dishes, having first dirtied each dish with scientific precision. Joe Peragine, their supervisor,

In the television lab at Consumers Union's Yonkers, New York, headquarters, Evon Beckford checks out the picture quality of large-screen sets; the signal is being transmitted from CU's own closed-circuit system.

holds up a sample dinner plate. It's marked off into eight wedge-shaped sections, and each section has something different caked to it—spaghetti, spinach, chipped beef, and so on. "For dessert bowls," he says, reading over the list he has drawn up for his soilers, "we combine one-quarter teaspoon of sugar, one teaspoon of evaporated milk and at least four cornflakes. It's mixed and spread well in the bowl. After one hour, we drain the bowl of excess liquid, leaving at least three cornflakes in each bowl." Lest the soilers be tempted to let two cornflakes do, Peragine will be watching the procedure closely.

In a large lab nearby, the throbbing strains of Tchaikovsky and the smell of yeast fill the air. "I'm baking bread," says Ruth Greenberg, gesturing toward a row of 20 competing ovens. Earlier this week, she baked cakes, 60 of them. For appliance testers, surplus foodstuffs in identical lots are a regular fringe benefit. Her coworker Emilio Gonzalez gained 20 pounds after joining the department two years ago; a chief culprit, he reports, was a blender test that yielded an endless supply of milkshakes. "You either eat it or you throw it out," he says.

Since the testers are testing appliances, not food, not all their creations are edible. Greenberg opens the door of an oven about to undergo a self-cleaning test. "This is Monster Mash," she says, referring to a crusty substance coating the interior that suggests month-old chili sauce. The recipe includes tapioca, cheese, lard, grape jelly, tomato sauce and cherry pie filling; mix well and bake one hour at 425 degrees. If an oven's self-cleaning cycle doesn't render the resulting residue into harmless-looking ash, five million readers will be so advised.

Some of the tests that Consumers Union runs are essentially standard industry tests, but many others are not. In one memorable test, CU's engineers pumped air into 16,000 condoms until they exploded—"often with a loud bang after having reached watermelon size," according to the resulting cover story. In *Consumer Reports*' version of tabloid titillation, the piece included a selection of strobe-lit photographs of the climactic moment. Several years earlier, in a triumph of low-tech creativity, CU's engineers stretched paper towels across embroidery hoops, moistened the center of each with exactly ten drops of water, then poured lead shot into the middle. The winner held seven pounds; the loser, less than one. Who could argue with that?

There is an obvious logic to such tests. The results are manifestly quantifiable. Some of the judgments that appear in *Consumer Reports*, on the other hand, venture

Since researching this story, the author has switched brands of toothpaste, mixes his own window-cleaning solution, and avoids fish that sit under hot lights.

Gelatin dessert, 1945: After a blindfold test, experts say color is the sole indicator of flavor.

Automatic electric steam iron, 1951: Watch out for meltdown!

Paper towel, 1980: How many pounds of shot can it hold?

Mid-size station wagon, 1974: Backward-facing seat could pose a problem for miniskirted passenger.

Mechanical walking dog, 1963: Batteries will probably cost more than original price of toy.

Coffee maker, 1958: If the sleepy-eyed user isn't careful, there'll be a miniature geyser.

into territory that is far more subjective. To get a taste for how CU applies scientific principles to unlikely subjects, I sit in on a meeting of the food department's sensory evaluation panel, which has just embarked on a monthlong test. The subject: chocolate chip cookies.

"I get no crunch. Is this a potato chip, people? I stick with my zero."

"Beverly, when you bite into it, you don't hear any noise? It's not a *corn* muffin."

The nine panelists are sitting around several tables that have been pushed together in a spotless, brightly lit conference room. All are middle-aged women wearing white lab coats with their names sewn on in red. On trays in front of each are two samples of a chocolate chip cookie identified only as No. 28. The women are part-timers from nearby towns who meet three hours a day, four days a week. They haven't yet begun rating individual brands. Instead, for the past two days they've been working out a series of 15-point scales: for chewiness, for example, they've rated an untoasted English muffin a 5, a brownie an 8, a caramel a 13. (Epoxy, presumably, would be 15.) Now, in a kind of taste-bud calibration, they're making sure they can agree on how to score a few random cookies on the different scales.

"It's soggy, sort of. Almost a shortbread cookie."

"I wouldn't call this shortbread. That's an insult to shortbread."

In between discussions of concepts like sogginess and crumbliness, the room is absolutely quiet as the women work, pen in one hand, cookie in the other, mouths moving slowly. There is no lip-smacking. Occasionally, like unsupervised toddlers, they break their cookies in half and pick out the chips with their teeth, but they do so with furrowed brows, preoccupied in their white lab coats.

"I couldn't eat pancake syrup for six months"

I have to admire them. After three hours of this, I'm ready to swear off chocolate chip cookies altogether. For the first time, I've become attuned to the artificial flavors that so many packaged cookies reek of. And these poor souls have another month to go. "Everything you do here, you get sick of," one of the women tells me afterward. "I couldn't eat pancake syrup for six months." Another drawback of the job is that friends stop inviting you over for dinner, says another panelist. "They think you're going to analyze everything."

To the ordinary cookie-eater, rating qualities like "onset of chip melt" on a 15-point scale may seem comically meticulous, but the attempt, however successful, is in keeping with the philosophy that has motivated Consumers Union from the beginning: applying science to consumption. In 1927, Stuart Chase, an economist, and Frederick Schlink, an engineer formerly of the National Bureau of Standards, published a sarcastic, infuriated and wholly entertaining diatribe against shoddy merchandise and sleazy sales techniques. *Your Money's Worth* pleaded for "the principle of buying goods according to impartial scientific test, rather than according to the fanfare and trumpets of higher salesmanship."

At the time, brand-name products were still a fairly new idea. In an earlier day, most merchandise was of the mom-and-pop variety. If you didn't make your own cookies, the baker on the corner did. Brand names were intended to reassure people that the new, mass-marketed products made by distant strangers were safe and effective. But brand names, in 1927 certainly, were no guarantee of quality. Schlink and Chase wrote that it took 495 bottles of name-brand mouthwash "to equal the antiseptic action of one cent's worth of corrosive sublimate." In a follow-up best-seller, *100,000,000 Guinea Pigs*, Schlink and a fellow engineer, Arthur Kallet, warned of everyday hazards on store shelves. Referring to a German Army officer who supposedly committed suicide by swallowing a tubeful of Pebeco brand toothpaste, they noted that a third of a tube would have sufficed.

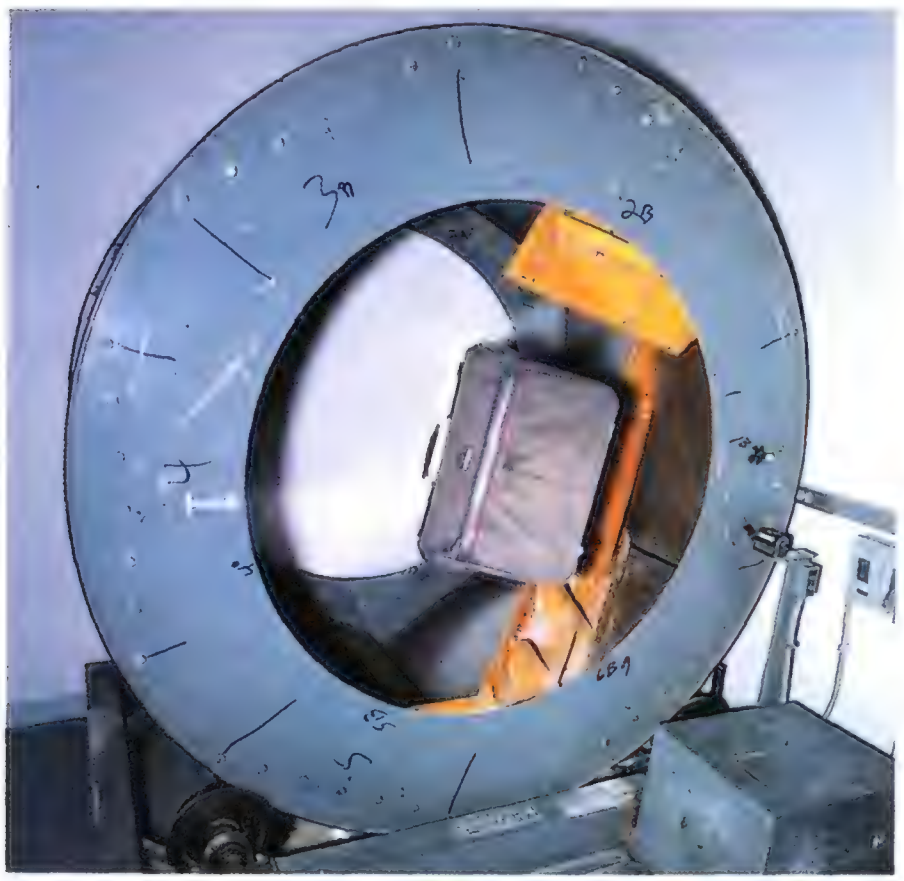
The starting pay was $10 a week

Before his publishing success, Schlink had run a small consumers club that met in a basement in White Plains, New York. His newfound notoriety helped transform the club into a product-testing agency, Consumers' Research Inc.; the mimeographed club newsletter became a monthly magazine. Following a bitter strike in 1935, Schlink's erstwhile coauthor Arthur Kallet and most of the other employees left to form a new and militantly pro-union rival, Consumers Union, with Kallet as director. Starting pay was a uniform $10 a week, although the staff agreed to forsake salaries until subscription money for its new magazine started flowing in.

The products rated in the first issue of *Consumers Union Reports*, which appeared in May 1936, were mostly small and cheap—cereal, stockings, milk, toothbrushes. Cheap products were all the staff could afford. Without test facilities of their own, the editors combed technical and medical journals for data or ran simple product tests at a local college. The automotive writer had to borrow new cars from friends.

From the start, the magazine offered not just product advice but commentary, cartoons, blunt attacks on false advertising and, not surprisingly, reports on the labor conditions under which various products were made. The second issue dismissed the Good Housekeeping Seal of Approval as nothing more than a fraudulent ploy by William Randolph Hearst to reward loyal advertisers; *Good Housekeeping* responded by accusing CU of prolonging the Depression. Controversy never hurt a magazine's circulation, of course, and by its second year readership had zoomed from 4,000 to 37,000.

A computerized device next to chief auto tester, Bob Knoll, provides readout on car speed and acceleration.



Oft-used luggage tumbler, affectionately dubbed the "Mechanical Gorilla," is an 8-foot-wide revolving drum.

A test we wish they'd waffle on: accuracy of scales is checked with metal weights, then entered in computer.

To a business and advertising community accustomed to pitching virility cures, miracle octane additives and puffed wheat (the addition of air justifying a 2,700-percent markup), the fast-growing magazine was a clear threat to the American way of doing business. More than 60 advertising-dependent publications, including the *New York Times*, *Newsweek* and the *New Yorker*, refused to accept CU's subscription ads. In 1939, in a development that seems bizarre if not ludicrous today, Congress' new House Un-American Activities Committee (at that time known as the Dies Committee) branded Consumers Union a subversive organization. The *Reports*' editors were unruffled, perhaps a bit flattered. "If the condemnation of worthless, adulterated and misrepresented products is a communistic activity," they wrote, "then the Federal Food & Drug Administration, the Federal Trade Commission and the American Medical Ass'n must be paid direct from Moscow."

Hair curlers, hi-fis and cars–especially cars

Despite the best efforts of the nation's watchdogs, the postwar buying spree was soon to make *Consumer Reports* an indisputably all-American institution. Citizens routinely consulted its pages before buying hair curlers, hi-fis and cars–especially cars. In the 1950s, the magazine's just-the-facts reviews helped turn Volkswagen Beetles and Maytag washing machines into household words. Some readers quibbled with CU's "very strongly expressed political stands, such as articles about taxation, socialized medicine, actions of Congress, etc.," as one reader wrote in 1948. "I have very grave doubts if your organization is qualified to pass on these subjects." The editors' reply was characteristically blunt: "A consumer may spend more in a year on medical care than on most products, more on taxes than on clothing, and be hit in the pocketbook more by actions of Congress . . . than by half a dozen price increases." The House Un-American Activities Committee, grown tired of running security checks on federal employees whose names were turning up on *Consumer Reports*' subscription list, quietly dropped CU from its subversives list in 1954.

Although one no longer hears accusations that the organization is a Red front, it has never become a darling of industry. Companies whose products have received bad reviews in the *Reports*' pages sue the magazine for libel from time to time, but CU prides itself on never having lost or settled a case. Of course, for every libel suit, there are probably uncounted gripes from manufacturers that CU's product testers don't know which end is up. When *Consumer Reports* warned in 1991 that Chrysler's new Ultradrive transmission was an unreliable dud, Chrysler chief Lee Iacocca complained: "We're thrown right in there with the frozen potpies and the low-flush toilets and the spot removers." CU's chief car

Where's the gorilla?

Chrysler Bldg. 42nd & Lex.

After the show, we just headed down Broadway and fell into this charming cappuccino place. We were both still full from dinner, but we couldn't resist. Cozy little booths. A jazz ensemble. What a find! Oh, the best part, they had this singer come on. She was great. She had the whole crowd singing. Then, she passed the mic around and we all sang solos. It was hysterical. We stayed till 1:45 in the morning. And walked back. There was this guy selling paintings a few blocks from our hotel. And wouldn't you know, after 5 months of searching for something for the kitchen wall, we found it in 2 minutes. You should've seen us. I don't know what was bigger, the painting or the grins on our faces. And all I kept thinking was

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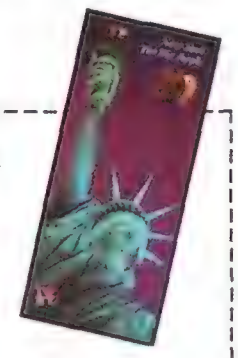

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Small digital timer beside pressure-cooker-with-gauge shows how long it takes to work up a head of steam.

tester responded, "We probably know less about spot removers than he does."

And they may well know more about cars. At CU's 330-acre auto-test facility in East Haddam, Connecticut, Bob Knoll and his crew test cars and nothing but cars. The secluded outpost is a former dragstrip surrounded by woods. It's virtually unmarked–"We don't need people driving in here telling us about their car problems," Knoll tells me after I manage to find the place. The access road is hilly, narrow and unpaved. If Michigan had more roads like these, Knoll believes, Detroit wouldn't have produced so many poor-handling cars over the years.

Knoll is low-key, informal and unhurried, a man who saunters when he walks. A car tester for Chrysler before joining Consumers Union 28 years ago, he seems amused rather than irritated by the car industry's fads. As we stand alongside the track, where the squealing of wet-braking sport-utility vehicles occasionally drowns him out, Knoll notes that drivers of such vehicles almost never take them off-road though ads depict them as mountain-climbing, gully-jumping adventure wagons. As to why so many people spend $20,000 or more to buy them, Knoll says simply, "They look rugged, and you sit higher, and that's nice." Moreover, he says, "in the ads, you don't see them being towed away after they land."

In any case, Consumers Union pays little attention to a car's alleged off-road abilities. Unlike the car-buff magazines, *Consumer Reports* evaluates every vehicle as a passenger car, pure and simple. And it does so exactingly. Knoll and his crew ride around the countryside with a digital tape recorder in the passenger seat to help gauge a car's engine noise, they pore over stacks of reader questionnaires that detail the repair records of different car models as the cars age, and they try to fit wheelchairs into the trunks. By contrast, Knoll says, the car-buff magazines are essentially entertainment. "They write about automobiles the way movie magazines write about movie stars. They like 'em." Knoll likes cars, too–his office is strewn with car toys and car pinups–but he doesn't get carried away with the mystique. When *Consumer Reports* was less than enthralled by the sporty new Mazda Miata two years ago, a Mazda spokeswoman complained that the article didn't take into account the feeling one has upon beholding so stylish a car in one's driveway. Knoll agrees completely. "We're here to give people buying advice," he says with a shrug.

Knoll ambles back to an indoor test area where he shows me four sleek new sports cars, all shiny as new pennies. CU paid full price for them, an average of $35,000. Now Knoll's testers are preparing to pound them with a hydraulic battering ram. The arrangement isn't really as profligate as it sounds: after Knoll's squad pays for any repairs that result, the cars will be sold off to employees, thus recouping most of the sticker price. (CU disposes of virtually all its test items the same way.)

With its weighted sled and flat steel ram, the bumper-basher looks menacing enough, but the blow it administers is more love tap than body slam–nothing more than a five-mile-an-hour pop, right on the bumper. Still, says Knoll, that's twice the battering speed that the federal government expects cars to withstand without damage. "They're just a waste of time," Knoll says of the federal standards, which were halved during the Reagan Administration. "Every car on Earth can pass them."

Although standards are lax, says Knoll, cars keep getting better. Between impact tests, engineer Rick Small and technician Joe Nappi reminisce about the old days, when they used to crash-test their cars by pushing them into a concrete, aboveground septic tank filled with sand. Even then, they were sticklers for precision: they'd watch an oversize speedometer clamped to the roof and let go of the vehicle just a few feet before impact. They always kept a broom handy. "I remember a group of Japanese pickups in the 1970s that got totaled–headlights, fenders, grilles, radiators," Nappi says. Today, when one expensive sports car fails to withstand a gentle, three-mile-an-hour corner shot, Nappi has to look around for something with which to sweep up the debris.

Later, after Nappi lines up a $38,000 Corvette for its trial-by-hammer, I venture to ask him for some confidential inside information. With all his experience testing cars, what model does *he* drive? Nappi doesn't hesitate to go on record. "I always drive CUs," he says with a grin.

CU's advice on vaporizers in 1952 was to bypass newfangled electric models and go for the simple fix.

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By Robert Wernick

The shadow of a gunman from World War II

He was a peaceable chap living in France, but when the Germans came, Johnny Hopper turned himself into an avenging hero

"Mauthausen was the worst of my camps," said Johnny Hopper. "And the worst part of it was the Jewish block at the south end. They had nothing to eat down there. It was separated from the rest of us by a no-man's-land where you could be shot on sight. I had a friend there, a man I had known in France, and I used to go see him on evenings when it was dark enough and I had something to bring him. Things they never saw down there, a bit of margarine, a bit of jam. The last time I saw him he said, 'They're going to kill me tomorrow, Johnny.' There wasn't much to say, we just crouched in the dark for a while. The last thing he said was, 'I'll miss my jam, Johnny.'"

My friend Christopher Burney, an English secret agent who spent many months in Buchenwald, once told me that the theory behind the Nazi concentration camps was that with a proper dosage of brutality, cold, hunger and fatigue, all human beings could be reduced to the level of animals in a driven herd. But he discovered that the theory was wrong, for even under the most atrocious circumstances a kind of natural aristocracy sometimes would reveal itself. There were remarkable people who in the face of everything would refuse to surrender their humanity, men like the French West Indian who once took off his coat to save Burney from pneumonia during a two-hour roll call in a howling blizzard, men who would risk their lives to bring a friend a spoonful of jam.

"He shot the police chief, leapt on a bicycle that was leaning there unattended, and pedaled away."

There was nothing remarkable in the background of Ian (Johnny) Kenneth Hopper. He was born in 1913 of solid East Anglian stock, one grandfather a brickmaker, the other a farmer. When he was 11, his parents moved to France. In 1940 he was living in a village near Caen in Normandy, happily married to a wife named Paulette, with a little boy, Jean-Claude, and a prosperous business selling radios and electrical equipment over a wide territory. By all accounts he was a big, good-looking, exceptionally strong, fun-loving young man.

When I met him some years ago, he had recently retired after 40 years of growing mushrooms in Norfolk, England. He was happily married to a new wife named Diana. He was still an imposing figure, tall and gaunt, with piercing gunmetal eyes, and a deep booming voice that would not inflect whether he was talking to Jack the plumber or Lord Whoever.

Between those two respectably plodding careers came the war years, 1940 to 1945, in which Hopper discovered that he had another calling: he was a killer. For two years he roamed the fields of German-occupied Normandy and the streets of German-occupied Paris, committing acts of armed robbery, arson, forgery and murder. He derailed trains, he blew up oil and ammunition depots, he shot his way out of ambushes. When he needed provisions for himself and the associates he acquired from time to time, he robbed a department store. When he needed money, he robbed a bank. When he needed a German colonel's uniform so that he could walk unimpeded into a German headquarters and walk out with documents that interested him, he waylaid and killed a German colonel.

An act of symbolic defiance

For millions of people, of course, the war years represented a tempestuous intermission in an otherwise peaceful life. But Hopper was a special case. He was a private citizen, a foreigner living in France, when the Germans came roaring in on a June day in 1940, and a private citizen he remained. He was never a member of any official armed force. "I don't believe in taking things lying down" is all he ever said to explain why he took up arms. "It was the Germans who set the rules, don't you see. I did terrible things, things as bad as the Germans did. I was responsible for the death of innocent people. But when you meet an aggressor you have to aggress back, aggress all the time, fight all the time."

He had no illusions about the efficacy or tactical significance of his work. In those early years of the war in France, a totally defeated, demoralized and occupied country, no act of armed resistance could be anything more than an act of symbolic defiance. "The Germans lost more men in traffic accidents every day," he said,

Illustrations by Arthur Shilstone

At 80, Johnny Hopper was still an imposing figure, tall and gaunt, with piercing "gunmetal eyes."

"than I could kill in a year." But the defiance had to go on.

Once a friend asked him, as they hid in a hedge by a roadside in Normandy, "Look, Johnny, suppose the Schleuhs [a Moroccan tribe, but also French slang for the Germans] win this bloody war. What will we do then?" "We'll go on doing what we are doing now," said Hopper, and pressed down a plunger to set off a mine that blew up a German staff car foolishly keeping to its strict daily schedule.

For security reasons, he kept no records, and being a member of no organization, no one kept records for him. After half a century, there is no way of checking on many of the details. His recollection of his last day in Caen, in the summer of 1941, was that he walked into an ambush mounted by the French chief of police and a dozen underlings. An article in a Caen newspaper 25 years later evoked the incident, and a few days later there was an indignant letter from one of the original ambushers claiming only three policemen were involved. But the rest of his account jibed perfectly with what Hopper told me: how he shot the police chief dead, then leapt on a bicycle that was leaning unattended against the curb in front of a bar and pedaled off to safety while the surviving police emptied their magazines at his retreating figure.

You will not find Hopper's name in the official history of British secret operations in France. His photograph does not hang on the walls of the Special Forces Club in London. There are brief references in the files of old newspapers from occupied Caen and occupied Paris to the misdeeds of the "English assassin Hopper." His name turns up parenthetically in a couple of books about the Resistance and the concentration camps. One day in Norfolk he received from an American cousin a newspaper clipping that she had saved, an AP dispatch from Vichy dated August 5, 1941, headlined "Germans Hunt Bold De Gaullist," telling of an Englishman named Hopper who, in defiance of a German ban against celebrating the French national holiday on July 14, had put on a French colonel's uniform and deposited a huge wreath of flowers on the monument to the war dead in Caen, directly in front of the German Army headquarters. (It was hard, he told me, to find a French colonel whose uniform would fit his 6-foot-3-inch frame.) Perhaps there is someone in Normandy who still has a copy of the poster that 5-year-old Jean-Claude Hopper saw being pasted up on walls all over Caen one morning with his father's picture on it, with an offer of one million francs for his capture dead or alive.

Jean-Claude's earliest memories are of mysterious visitors periodically slinking into the house in the little village of Mouen where Father and Mother were now running a milk business (because the milk trucks could go anywhere without arousing suspicion). They would have their hats pulled down over their eyes, they would talk in whispers, and they spent most of their time disassembling and cleaning their guns. The little boy was fascinated by a swarthy brute named Mario who used a long stiletto to pick at his shiny gold tooth.

A machine gun at the head of the stairs

Jean-Claude's liveliest memory is of the day he came out of his bedroom and Father shouted to him to get back pronto and shut the door. Father was setting up a machine gun at the head of the stairs. A moment later four German soldiers smashed through the front door. They could not have been trained police, for they recklessly came in all at once, and his father mowed them all down with a single burst. Later the mysterious visitors began to drift in silently, washing off the bloodstains, stripping off the uniforms, dragging the soldiers away to the woods for burial, taking their vehicle apart and carrying the useful pieces to one of the two garages in Caen where Hopper had begun stockpiling arms and gasoline and equipment.

Then one day Father and Mother went out in the

morning and never came back. Young Jean-Claude was taken in by his grandmother (who moved with him to England after the Liberation). And except for the dead-or-alive poster, the boy had no news of his parents for the next four years.

Ian and Paulette Hopper, their cover blown because some neighbor had talked, lived for two weeks in an old farm building near the woods, keeping a plentiful supply of pepper to discourage dogs from following the scent. Eventually they got to Paris, to a clandestine life in which they were constantly changing addresses, changing identities, warily making new friends, always looking out for betrayal, always planning new deeds of violence.

For the details of those deeds, we have to rely on the memories of Johnny Hopper himself, an old man's quirky memories by the time I met him and he began telling me his stories. For 40 years he had not told them to anyone outside the circle of his family and a few old friends. Not that he was shy. But what was the use? "The things we did every day then, people simply can't believe now. Sometimes I start talking, and they listen politely, and after a while their eyes begin to glaze over . . ."

The first story he told me he began, as he almost always did, in the middle. It was a spring afternoon in Paris in 1942, and there had just been a deadly shoot-out in a café in the Rue Beaubourg: "I had been shot in the arm, you see. Fortunately I had a jacket with tight sleeves, so there was no blood to leave a trail on the sidewalk. I ran down the street till I found a public phone, and I called my friend Doctor Chanel to meet me at a safe house we had on the Boulevard Bessières. The house belonged to a very wealthy woman, an artist, also a drug addict—a very brave, trustworthy woman but totally reckless. She had to choose this particular day to get into a fight with four German officers and get herself arrested.

"Chanel had just finished bandaging my arm in the library upstairs when we heard a great noise downstairs, and it was five or six soldiers announcing to the maid that they had orders to search the house. I never traveled without at least three guns about my person, and I gave one of them to Chanel. He had never held a gun in his hand in all his life. I told him to do nothing till he saw me start and then to shoot whatever he saw moving as fast as he could. By good luck, they were just ordinary soldiers, not Gestapo or anything like that, and they couldn't read a word of French. They found so many papers downstairs in the drawers they kept pulling out and throwing on the floor, that they decided they needed an officer to help them out. So they marched off to find one, leaving a sentry at the front door.

"'They're going to kill me tomorrow,' my friend told me. There wasn't much to say. So we just crouched in the dark awhile. The last thing he said was, 'I'll miss my jam, Johnny.'"

"Hopper had borrowed a waiter's jacket and a tray with cognac and a glass. When the SS man called for his nightcap, Hopper carried the tray to his bedside and then shot him in the head."

"The front door was the only way out for us, because with my arm I couldn't climb over the garden wall. We pushed it open a crack. The sentry was leaning against the wall and looking bored as hell. It would have been very risky to take a shot at him. We decided to wait awhile, and sure enough a squad of German soldiers happened to go by, marching down the other side of the boulevard. Our friend trotted over to them, to bum a cigarette or to have a little chat, and it gave us a chance to slip out onto the sidewalk.

"The street was full of people hurrying to get home before curfew. We had gone a good 50 yards before we heard '*Halt!*' Then we ran, and there was gunfire, and we dodged through side streets and alleys till we were sure no one was on our trail. By now it was long past curfew, the subways were closed. We were a good five miles' walk away from the nearest safe house we could use, which was by the Eiffel Tower. We didn't need to worry too much about dodging the German patrols, they always made a lot of noise. The French police were much worse, much sneakier, they were oh so anxious to show the Germans what good little boys they were. So we agreed on a plan. If we suspected they were sneaking up on us in the dark, we would start rolling around like a pair of drunks, and I would recite German poetry, of which I knew a good deal, and Chanel, who didn't speak a word of the language, would just say "*Ja, ja.*" It sounds simpleminded, but we made it all the way to the Eiffel Tower, only to find that our safe house was no longer safe, and we had to keep walking . . ."

Perhaps my own eyes were beginning to glaze slightly at this point. Was Hopper embroidering his account with touches from a war movie that had been on television recently? It was an unworthy suspicion. While most of the eyewitnesses are dead by now, Dr. Raymond Chanel is still alive, hale and 85 and just retired from practice as an ear, nose and throat man in the French provincial city of Nevers. When I visited him there, he showed me an account of the night in question. He had written it at the end of the war in 1945, when his memory was fresh. In every detail it was identical to Hopper's, except that it added one thing Hopper had forgotten to mention: during that five-mile stroll they had been packing at least six guns between them.

Chanel is convinced to this day, as were all the other French who worked with Hopper during the war, that he was an agent of the legendary British Intelligence Service. He was not. If British agents heard of him at all, it was only as an anonymous operative who sometimes, after they had spent months planning to blow up some target, would get there first on his own.

Hopper had to learn all the arts and dodges of the un-

Robert Wernick has published more than 50 articles in these pages. He lived in Paris before WWII, then served in France with the U.S. Army Signal Corps.

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derground operative by himself. As someone familiar with delicate radio equipment, he had no difficulty in learning how to pick locks. He became an expert at using pen and ink to imitate the uneven pressure of a rubber stamp on paper or photograph, and none of the scores of identity cards and passes he forged for himself and his associates were ever challenged. He had no military training whatever, but they had taught him how to use a gun in school, though he had never killed so much as a rabbit.

"But you see," he once explained to me, "I worked at close quarters, and at close quarters you don't need technique, you need nerve. I learned a great deal the first time I ever shot a man, a French policeman named Bernard. He had ordered me to drive him to police headquarters, and when he saw that I was heading for open country, he pulled his gun. I was quicker, and I shot him in the head. It was a small gun, a 7-millimeter, and it only wounded him. I dropped him off at a hospital with a word of advice about keeping his mouth shut.

"The reason I was quicker was, at the moment he got that gun in his hand I noticed a kind of tightening about his jaw. I saw that tightening many times afterwards, saw it in some of the best killers the Gestapo put on my trail. What it means, don't you see, is that at that moment when their lives are on the line, no matter how professional they are, there is just a moment when they can't help thinking of what might happen, what might happen to them and their careers and their families. It might last only a fraction of a second. But that was the fraction of a second I could use.

"Because it was different with me. I knew, I *knew*, that as one man against so many, I didn't have a chance of surviving in the long run. Betrayal, or bad luck, was bound to catch up with me. And I was determined that they would not get me alive. It was understood among whoever went into action with me that if there were any wounded who could not be taken safely away, they were not to be left to be tortured by the Gestapo, they were to be finished off then and there."

"I have never seen anything like Hopper preparing for action," says Dr. Chanel. "He was a perfectionist; he had to be sure that everything and everybody would be in the right place at the right time." The actions might range from picking a few locks in a prefecture at noon, when everyone had gone out to lunch, to stealing a year's supply of ration tickets, to full-scale military actions like the abortive attempt to derail an armored train believed to be carrying Marshal Göring to Cherbourg.

Once he assigned himself the job of liquidating a high-ranking SS officer, a "nasty piece of goods," who had made a specialty of infiltrating Resistance groups and knew altogether too much about them. The German had taken a room at a luxury hotel in Paris. Hopper had borrowed a waiter's jacket and a tray with a bottle of cognac and a glass. When the SS man called for his nightcap, Hopper carried the tray to his bedside, then shot the man in the head. He dragged the body to the big old-fashioned fireplace and signaled to a pair of confederates who were waiting on the roof in the darkness of the blacked-out Paris night. They lowered a rope and pulled up both men, the living and the dead. They tossed the dead man over to the roof of a neighboring building, took the body down in the elevator, loaded it into a stolen car with German license plates, and drove on to a house in the suburbs where a pit in the garden was ready, half-filled with quicklime.

"German soldiers smashed through the door, and Hopper mowed them all down with a single burst."

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"Those who know us, love us."

"The customers and bartender were still on the floor. I looked around to the table where we had been sitting, and there was my wife with her head on the table."

Hopper had no overall strategic plan. Hardly anyone did in those early days. In 1941 and '42 there were no practicable Allied plans for invasion, there were only a few sporadic drops of arms and equipment and agents from England. The active Resistance world at this time was very small, and very dangerous, for there were spies and traitors everywhere. Hopper learned how to navigate through it. "You saw a barman named Gustave who knew where you could find a man named Pepito who could put you in touch with someone called Le Professeur who knew a great deal about the movements of ammunition trucks." He had a gift for finding friends and collaborators when he needed them. In the lonely little groups that were trying to light fires in the dark of Hitler's Europe, he acquired a considerable, and quite exaggerated, reputation. A friend of mine named Giselle Guillemot remembers the days when she was 19 and a member of a Communist-led network that considered itself the only force actively fighting the Germans in the Caen area. Whenever they heard of any exploit that they had not carried out themselves–a bomb thrown into Gestapo headquarters, a supply depot set on fire–they automatically attributed it to Hopper.

The Germans too were impressed by the "English assassin." They set six (or seven, "after a while you stop counting") traps for him, and Hopper shot his way out every time.

The last time was on April 12, 1942, the only precise date he could remember in all that time, the date of the incident on the Rue Beaubourg in which his arm was wounded. He and Paulette had gone to a café to keep a rendezvous with a Doctor Mineur who had some information to give him about a double agent known as Monsieur Paul. This was Paul Cole, a former British Army sergeant who migrated to France and became a terribly effective traitor, selling out more than 200 men and women to the Gestapo. Mineur had recently disappeared from view for a couple of weeks, and Hopper had a nagging suspicion that he, too, might have turned double agent, as he eventually did. But any information leading to Paul Cole was too important to be neglected, and the rendezvous had to be kept.

Hopper chose seats with his usual care, at the end of the long narrow café, with his back to a wall and a clear view of the entrance door. Mineur came in on schedule, and right behind him were two Germans in uniform and another in civilian clothes. Soon there was firing all over the place, chairs being overturned, customers diving for safety under tables or behind the bar. "I had to shoot around Mineur, who was a big man," said Hopper. "If I had known then what I later learned about him in Mauthausen, I would have shot through him.

"I didn't know at first how badly I was wounded. I ducked back through a door next to our table, to take stock and to get a fresh gun unstrapped from my leg. It was only a sort of closet back there, but the Germans must have assumed it was a rear door to the alley. I had hit all of them more or less badly, and when I kicked my door open, they were all running out the front door to get help. All the customers and the bartender were still on the floor. I looked around to the table where we had been sitting, and there was my wife with her head on the table."

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Johnny Hopper, one-man army

Blood was gushing from her mouth. In a single instant Hopper judged that the wound was fatal, but that she might live long enough to be tortured by the Gestapo. He did what he would have expected her to do to him: he put the muzzle of his gun to her right eye and pulled the trigger.

"I have relived that moment every day of my life," he told me 48 years later, "always asking myself the same question."

But neither then nor later was there time to stop. As soon as his arm healed, he was back in action.

Both the German and the French police knew Hopper well by then. He had learned how to put bits of matchstick wrapped in cotton into his cheeks and nostrils to change his appearance. But he could not conceal his powerful frame, towering at least a head above the average Frenchman.

One day in August 1942 he was caught in a routine identity check by the French police at the exit of a subway station. They found his guns and kicked him around and took him off to a large white room where they interrogated him till past midnight. They kept asking him who he really was, and he finally said, "My own mother wouldn't recognize me now. But if you hadn't been in such a bloody hurry you would have looked over there on the wall at that poster, and you would have recognized me right away."

They handed Hopper over to the Germans, who put him in the prison of Fresnes in the southern suburbs of Paris, where he was kept in solitary confinement, chained hand and foot, for the next eight months. A notice pinned to his door read: "*Achtung!* This prisoner is extremely dangerous. It is forbidden to enter the cell unless accompanied by two guards."

Every week or so a car would come to take him with two armed guards to Gestapo headquarters on the Rue des Saussaies in Paris to be beaten, kicked, plunged into icy bathtubs and asked the same round of questions. He never told them a thing they did not already know, and he never stopped scheming to escape.

One day when they moved him from his cell, they sewed on his jacket the letters "NN," for *Nacht-und-Nebel*, the "night and fog" from which dangerous enemies of the Reich like Johnny Hopper were not supposed to return. His destination was the concentration camp of Neue Bremm in the southwest corner of Saarbrücken. At his first roll call Hopper watched a man who had made the mistake of talking back to an SS officer receive the worst beating he had ever seen anyone undergo and live.

This was Royal Navy Lieut. Comdr. Pat O'Leary, "the bravest man I have ever met," said Hopper, who for the next two years would be his daily and devoted companion. One of the great unsung heroes of World War II, O'Leary had set up the escape lines through which thousands of downed Allied aviators would escape from occupied Europe. He became the center of a little group, including a number of captured British secret agents, that managed to survive the successive circles of the Nazi hell through which they had passed, first at Neue Bremm, then Mauthausen in Austria, then Natzweiler in Alsace and, finally, what Hopper called the "charming Bavarian resort" of Dachau.

In addition to exceptional qualities of physical and moral endurance, it took a good dose of luck to survive. Brian Stonehouse escaped the killing work at Mauthausen because he could paint flattering portraits of the camp commandant. Hopper had the good fortune to run into an old friend, Robert Perrier, known as Robert le Kid, a professional boxer with underworld connections. The SS, who needed some rest on Saturday after a week of killing people, put on various diversions, including boxing matches. Since relatively healthy prisoners were needed to do the boxing, Robert le Kid and others were given cushy jobs in the camp kitchens where they could "organize" all the food they wanted. Le Kid shared his loot with Hopper, and Hopper in turn could pass it on to others, like his friend in the Jewish block.

The only available treatment was opium

Also in Mauthausen was Doctor Chanel, who worked in what was known as the camp hospital. Mostly it was a place to die in, and nowhere did the prisoners die more quickly or in fouler surroundings than in its contagion ward. Chanel was appalled to learn one day that his friend Hopper had checked into this ward complaining of dysentery. The only available treatment was opium, and only minuscule amounts were available for ordinary prisoners. But Hopper was far from ordinary, if only because as a *Nacht-und-Nebel* he could be killed only on direct orders from Berlin, so Chanel was able to wangle several substantial doses for him. In a day or so the

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"Hopper sometimes taunted concentration camp guards by showing what would happen to them after the war."

patient sat up on his filthy straw mattress, said he was better and walked out of the ward. Only later did Chanel learn that Hopper had never had dysentery at all. But there was a prisoner named Gaston Pateau who did. Hopper had known him as part of a Resistance group in Paris and had deep suspicions of his loyalty, but in Mauthausen they had become good friends. When Pateau took sick, there was only one way for a friend to help him. The help came too late; Pateau died and was tossed with the rest of the daily batch into the crematorium.

In Dachau other friends connived to get Hopper a job as a medical orderly. One day he was helping unload a cattle car crammed with 80 people who had been en route for several days. It took him half an hour to find a live one. On a wheelbarrow being trundled past him he saw a heap of stinking rags with a pair of blue eyes faintly blinking out, and he recognized them as belonging to a Norwegian youth, Arne Brun Lie, whom he had met back in Natzweiler.

Lie had joined a Resistance group in Oslo and had promptly been arrested and deported. He was 19 years old at the time. Decades later he came to visit Hopper in England and recalled, "I was half dead when you found me." "Ninety-five percent," corrected Hopper. He picked Lie out of the wheelbarrow, washed him, fed him, joked to him, nursed him back to health, and several times managed to scratch his name off a list of prisoners marked for infection with tropical diseases in an experimental medical program.

It took Arne Lie almost 50 years to be able to write about his experiences, in a moving book appropriately called *Night and Fog*. Hopper is the only unalloyed hero in it. It was, says Lie, his "cheeky, desperate, insane fighting spirit that saved us."

No one but Hopper, for instance, would have dared to taunt concentration camp guards, putting his hands around his own neck and squeaking to show what would happen to them after the war.

In the spring of 1945, as the Reich lurched toward its final collapse, orders were issued in Berlin for all Allied secret agents in the concentration camps to be killed. At some camps, such as Buchenwald, the orders were carried out. But at Dachau, a dumping ground for prisoners from camps all over the Reich, where typhus and starvation were overtaxing the crematorium and the SS administration was totally demoralized, the orders never arrived. Pat O'Leary's men were still alive and reasonably vigorous as the time came for what they expected would be the climax of their captivity—the moment when the SS would try to liquidate the camp, and the prisoners would have to rise up and fight to stop them.

Happily, Gen. Alexander M. Patch's men arrived two days before the insurrection was scheduled to occur. Instead of killing the SS, the first job of O'Leary's organization was to keep the released prisoners from lynching their guards. (One particularly nasty one named Wernick was literally torn to pieces, but the rest were saved to be turned over to the international justice system for postwar trials.)

And so the war ended for Johnny Hopper. For him and so many others, the moment of freedom was almost a greater trauma than the moment of imprisonment. Brian Stonehouse, back in London, shaved and handsome and in a clean uniform, was invited to dinner by some British women who had served in the ambulance corps. They had pooled all their precious ration tickets to grill him some lamb chops, English-style. He left early, remarking, "I can't stand the smell of burned flesh."

For months his hands shook uncontrollably

Even Hopper, the iron man who had come unmoved and joking through so much ("They had knocked out all his teeth, and his whole body was covered with cigarette burns," noted Arne Lie), had a kind of nervous breakdown when he came marching home to England on legs that his son described as blackened sticks. For months his hands shook uncontrollably.

Eventually he settled down to a humdrum civilian life in a picturesque provincial village ("Don't bother to come here," he once told me, "it's the North Pole"). He ran his mushroom farm successfully until he felt that union demands had become too outrageous, and he shut the business down.

He also kept up intermittent contact with friends from the underground and the camps. He regularly went to Brussels to visit Pat O'Leary who, free at last, could reveal what the Germans had been too thickheaded to figure out despite countless beatings and interrogations:

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that he was not a French-Canadian named Patrick O'Leary, speaking French with a strong accent of Liège, but a Belgian doctor named Albert Guérisse who had changed identities in 1940 to protect his family. He was the first man to whom Hopper had been able to tell the story of the death of his wife, and the first to reassure him that he had unquestionably done what he had to do.

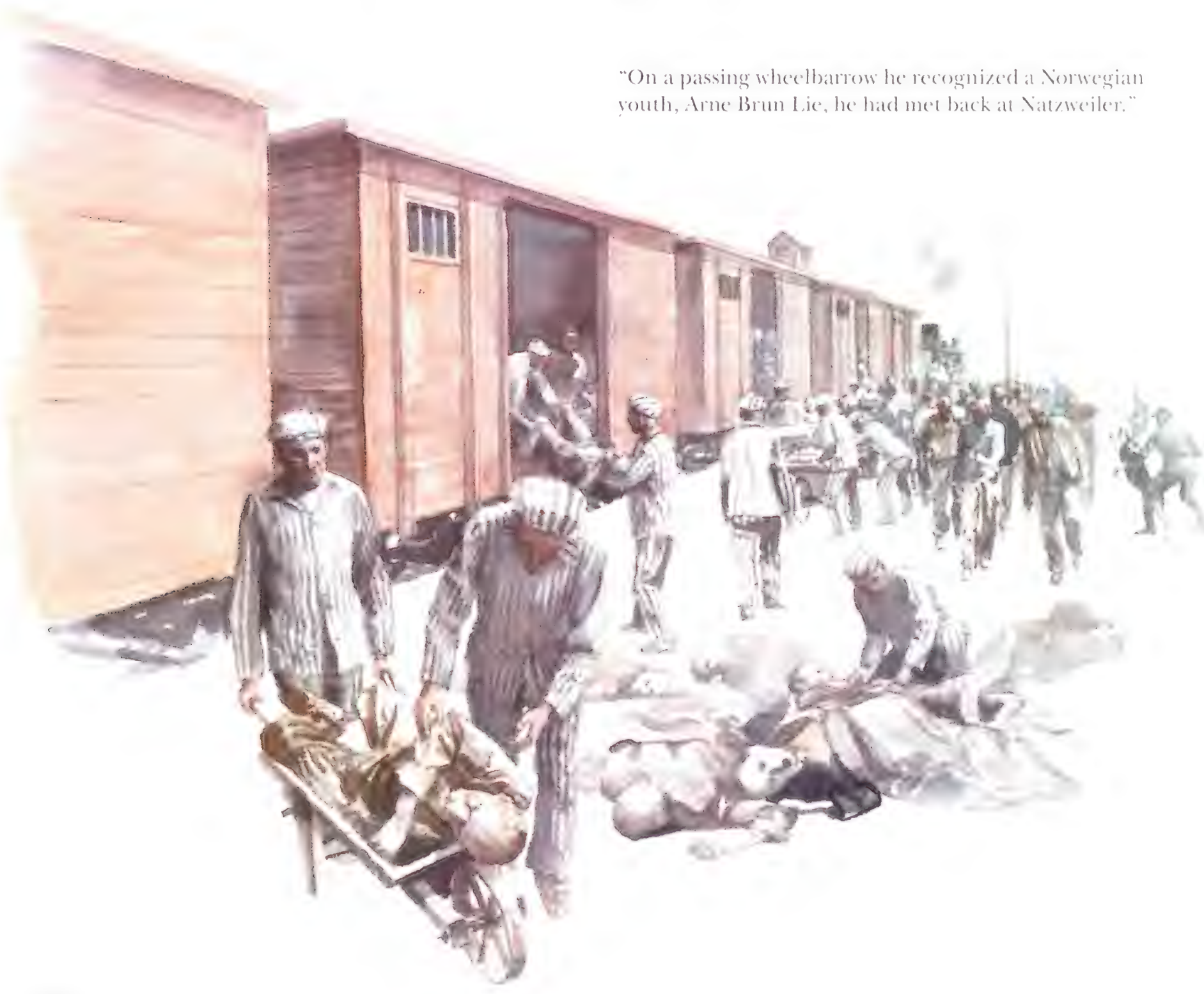
Ian Kenneth Hopper died two years ago of cancer, having at last met a foe he could not outsmart or outshoot. When I last saw him for lunch at a hotel in London, he was very thin and in considerable pain, but he had other things to talk about.

"Do you know the latest?" he said. "They have turned Mauthausen into a bloody museum. As you know, the centerpiece of Mauthausen was the quarry, and it had 186 steps up which we used to carry rocks. I used to say it was getting me in shape for my escape. The rule was that anyone who fell down on the steps would be beaten till he got up or he died. They had a horse and a cart that came every afternoon for the bodies. The bad thing about the steps was that they were uneven, no two the same height or breadth, and when you were going up at the fast pace the authorities recommended, it was the devil's own work to keep your balance. And now, as I say, it's a museum, and they have evened off all the steps, to make them comfortable for the tourists."

Over dessert he talked more or less at random of incidents that came floating up from the dark pool of his memory. The overflowing typhus ward at Dachau. The night in Paris when seven Germans jumped him and found two of his guns but neglected to search for a third. How he once bamboozled the transport service of the Wehrmacht into giving him a whole month's supply of diesel fuel for the province of Calvados in exchange for some stolen ration tickets.

Over coffee, there came a moment of silence when the clatter of cups and the conversations around us chanced to reach a dead point simultaneously, and out of the silence Hopper's voice arose. The line he spoke was classic Hopper, resonant, self-assured—and highly theatrical. "Never shoot a man in the head with a small-caliber gun," he said.

"On a passing wheelbarrow he recognized a Norwegian youth, Arne Brun Lie, he had met back at Natzweiler."



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By Richard Wolkomir

Trying to decipher those inscrutable signs of our times

Semiotician Marshall Blonsky can look at a coffee cup–or Vanna White–and arrive at conclusions that are, well, astounding

Marshall Blonsky is about to "read" my suit. I asked him to do it. He is a leading semiotician, skilled at deciphering the underlying messages in things. But I suspect my suit's underlying message is "Hick!"

"Read your own jacket first," I say, as we talk in the restaurant of a Manhattan hotel, where the elevator chitchat is about million-dollar deals and skiing in the Andes.

Marshall stands to display his jacket. To me, it appears merely black and droopy. But couture is not my strong point–when I left home to catch the plane to New York this morning, two moose were wading in the bog behind my mailbox. My own "look" is *Northern Exposure.*

"This is a mélange of Giorgio Armani's old and new styles," says Marshall, a semiotics professor at both New York University and the New School for Social Research who counterpoints baldness on top with an emphatic mustache. "The jacket has bone-crusher shoulders, and a long line that gives it . . . *gravitas*, seriousness . . . and feel the fabric!" I feel the fabric.

"It is crepe, the fabric of serious mourning," Marshall tells me. "Actually, Armani wants it even more droopy–I've had it tailored away from that because the real meaning of this jacket is penitence, regret for the excesses of the 1980s–the greenmail, the hostile takeovers–and I personally have no interest in the idea of penitence because I never made any money in the 1980s anyway." Who would have thought a sport jacket could be so loquacious? I am already learning about the semiotic view of the world.

But for a signwise top gun like Marshall Blonsky, an Armani suit is merely the stuff of target practice. His latest book, *American Mythologies*, gives the "new world cultural order" a semiotic trouncing. To write it, he spent four years hanging out with international glitterati like newscaster Ted Koppel, Russian poet Yevgeny Yevtushenko, horror novelist Stephen King, *Wheel of Fortune*'s Vanna White, and her creator, game-show producer Merv Griffin. I have come to New York to find out what he learned from these notables, whom I visualize as wearing trousers that actually match their jackets. That thought occurs to me because Marshall is now "reading" the nubby tweed of my own jacket and the telltale fact that my tie, as usual, has twisted around.

"The tweed, the slight riskiness of the striped tie with the checked jacket, the oxford button-down collar–it all says 'working journalist,' as opposed to the decadence and outrageous luxuriousness of what I'm wearing," Marshall says. Is he just being kind to a visitor from moose country? Even so, I am now amiably disposed toward semiotics. I point out that every man in the hotel lobby, except us, is wearing essentially the same squarish suit, in varying shades of dark gray or dark blue.

"It's the standard business suit, which originated in the 19th century," Marshall explains. "Its message is the immobilization of the body, declaring that the wearer is a *brain* person, who no longer does country work."

To semioticians, the world is a broth of such signs and signals. "We live in the semiosphere," says Marshall. Cars send messages about their owners: "I'm a sophisticate who drives a precision automobile crafted in Bavaria" or "I'm an outdoor macho guy who needs power to all four wheels." Italian designer jackets beam out messages. So do book jackets (Marshall's is hot pink, with Marilyn Monroe peeking out). So do telephones you carry in your briefcase, Presidential haircuts and Arnold Schwarzenegger's biceps. And semioticians like Marshall Blonsky read these invisible memos.

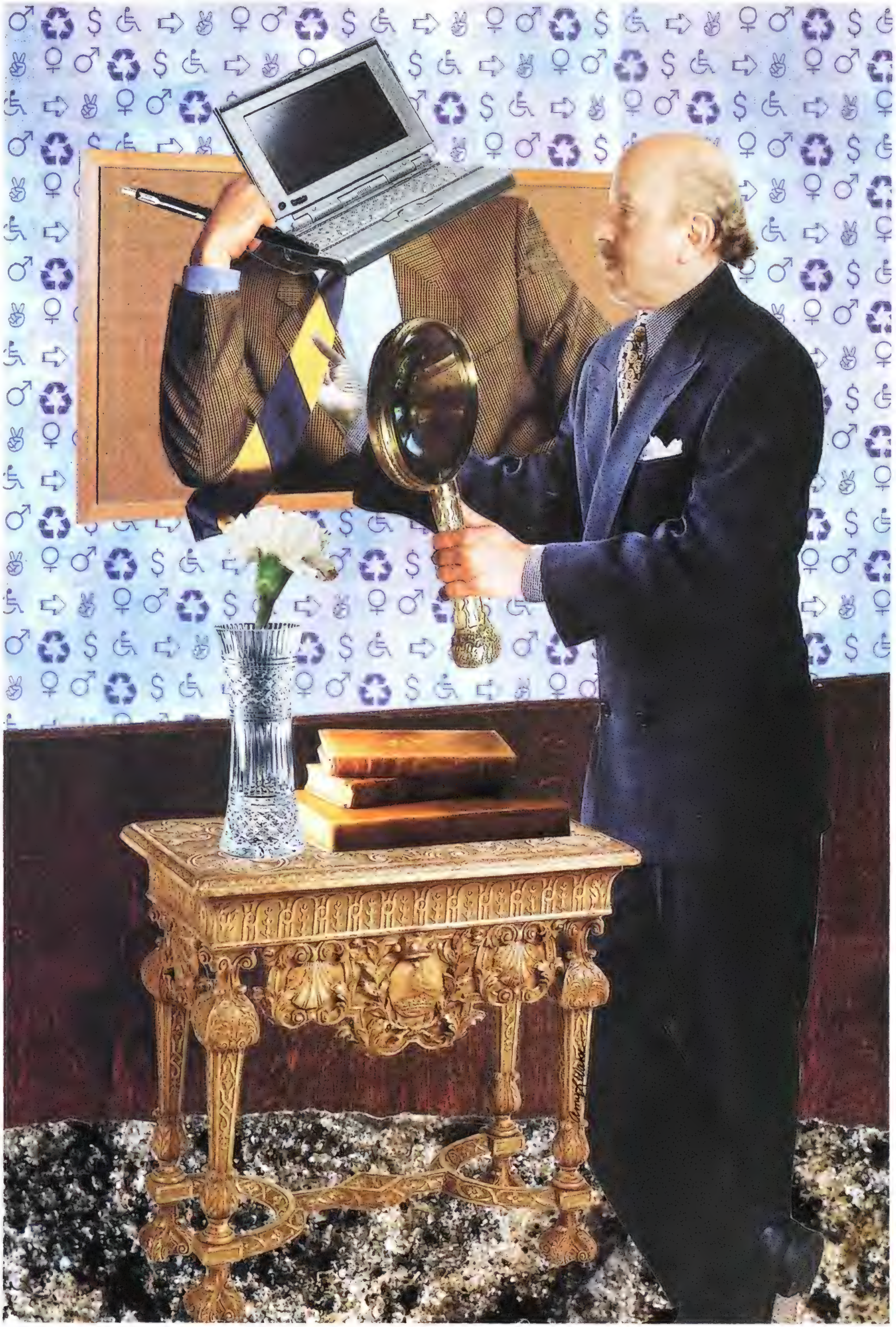
For instance, he says, a man standing on a street corner looking at his watch is not really interested in the time. He is actually transmitting a message to passers-by, who, he imagines, wonder why he is loitering on the corner. He is signaling: "I am not a bum–I have an appointment."

"All life is like that–a grand theater of communication," Marshall tells me. "Semiotics is the attempt to understand these seemingly disparate signs, from the shapes of new coffeepots to the underlying messages in the waiflike emaciation of some high-fashion models."

A semiotic news flash: the jury is still out on coffeepots, but Marshall relates the neurasthenic, prepubescent look of today's hottest models to the designers' "tapping into

Anything–his designer jacket, a writer's casual duds or an ersatz-ornate table–can speak volumes to Blonsky.

Illustrations by Amy Wasserman



Certain accouterments–credit cards, cellular phone, four-wheel-drive vehicle–signify striving "urban nomad."

the collective unconsciousness" for a vision of a world "stalked by AIDS and ecological disaster." He says it evokes Sophocles' tragedy *Oedipus Rex*, which begins with calamity upon the land. "The cattle and fruit are sickened," he says, "and a blight is on the women." And I thought it was just that the models dieted too much!

"Did I mention that my friends call me Dr. Sign?" Marshall asks, and he proceeds to "read" our restaurant table. "The small coffee cup, the fluted shape–it's declaring elegance with an English touch . . . and the lobby's chesterfield sofas, a carnation on the table, the restraint . . ."

In the 1980s, he says, designer Ralph Lauren created multipage advertisements showing his clothes on models in settings that featured country estates and prep schools. This hotel's lobby decor derives in part from those advertisements, he reasons. "Ralph Lauren created an image of the American ruling class based on the British, so we're dealing with a text, which is the Laurenesque reading of imperial pseudo-Britain."

Who would have thought? But Marshall's reading of the hotel goes further: a feature of the international culture now taking shape is that most of it is ersatz, just as this hotel is merely a simulacrum of upper-class Britain. People who turn up their noses at jogging outfit themselves in running shoes and sweatsuits. And we flock to theme parks like Epcot Center to experience faux Europe: generally, image replaces substance. A Japanese government economist told Marshall that the Suzuki Corporation flopped marketing its new motorbikes in Europe until advertisements began presenting the motorized bicycles as aluminum ponies, steeds for urban Euro-cowboys.

That is just the sort of thing I came to New York to hear, even if I don't actually understand every word. I'd been seeing ever more frequent mention of semiotics in rarefied intellectual journals. And many university literature courses are now taught from the semiotic point of view, looking for "codes" hidden in the relationships between words. Even the *New York Times* reported on the April 1993 Vancouver summit meeting by zeroing in on the "perennial semiotic summit issue of 'who blinks first.'" The reporter analyzed such key semiotic points as Bill Clinton's haircut versus Boris Yeltsin's. And she noted that President Clinton trumped President Yeltsin's "*nyet*" to an umbrella to ward off the Pacific drizzle by doing without both an umbrella and a coat. Meanwhile, semiotic buzzwords, like "deconstruction," regularly pop up in trendy fashion magazines, semiotics being currently hip.

Actually, semiotics is old. The word itself, from the Greek term for "sign," appeared in early discourses on theology and medicine. But in the 1600s the British philosopher John Locke recoined "semiotics" to mean a science of signs. In the late 1800s the U.S. polymath Charles Sanders Peirce (philosopher, mathematician, scientist) developed semiotics as an aspect of logic. Linguists and, later, anthropologists adapted semiotics to their own scientific disciplines. But after World War II European intellectuals widened the spectrum, applying semiotics more systematically to philosophy and literature. To these thinkers, like Marshall Blonsky, society and everything in it–from novels to tablecloths to skyscrapers–became a "text," bristling with embedded signs and codes. The semiotician's work is to "read" these codes.

One tool is "deconstruction," which involves the tweaking apart of any "text," whether it is a dictator's oratory or a wallpaper pattern, into its constituent intellectual nuts and bolts. (The point being to reveal that nothing is as simple as it is being made to look.) "The aim is to 'destabilize' the message, so that the codes no longer control us," says Blonsky. "It checks the totalitarian impulse." But he says the discipline sometimes wanders from its roots. "It's possible to cut away semiotics' ethical dimension and use it to sell soap," he says. "I recently received a telephone call–they said, 'We're an advertising agency and we need a semiotician.'" And he points out that the long-

Richard Wolkomir remembers the pre-semiotic era when signs conveyed simpler messages, such as "Burma Shave," "Yield" and "Stop!"

running-Energizer-battery commercial, in which a seemingly legitimate advertisement for, say, laundry detergent is abruptly "destabilized" by the unexpected appearance of the battery-powered Energizer bunny, insanely beating its drum, is an example of deconstruction.

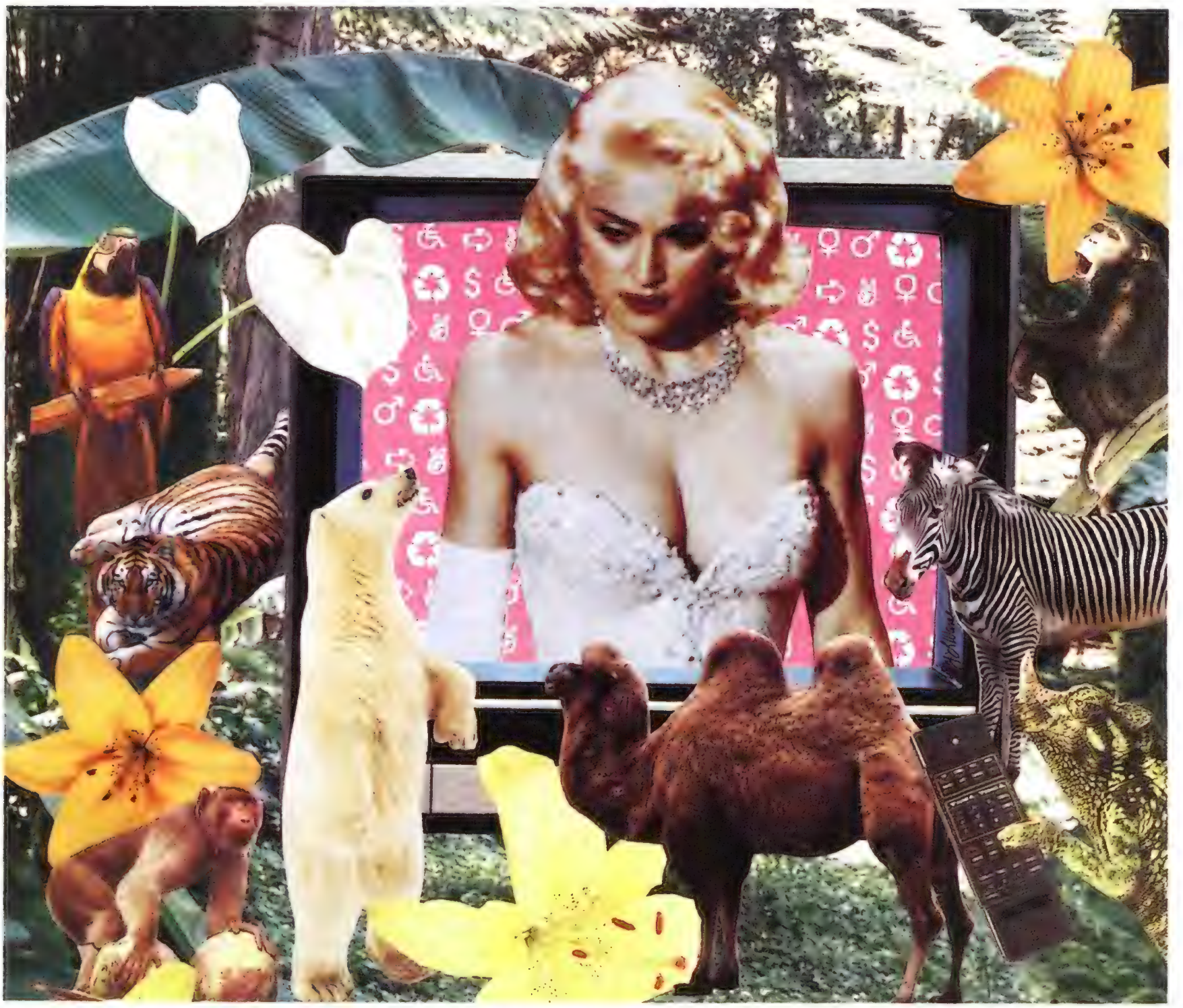
"Deconstruction": the word buzzes with aggression. Trained semioticians, no doubt, wield this intellectual scalpel with precision. But in the hands of a fellow from moose country . . . ? Still, it is irresistible.

Let us now have a go at deconstructing Marshall Blonsky.

We see the erudite professor, with his swank Italian jacket and his mustache and his way of compacting ideas and counterideas and ramifications of those ideas into sentences that writhe with clauses. But is there, perhaps, an underlying subtext?

We know this: he grew up in Kansas City. His father was a banker and his mother sold real estate. His younger brother is a geriatric-center administrator, but Marshall's career took a more exotic turn, starting at age 7, when his mother took him to a concert. "Little Marshall got up and imitated the conductor, and then imitated the violin soloist," he says. "My mother immediately decided that I was destined to be a violinist, and from the age of 7 to 17 I fiddled away." He was, he says, so committed to becoming a concert violinist that he had only one other interest. "I studied the Talmud," he says. Music and religious law–preparation, perhaps, for semiotics.

Ultimately, he jettisoned the musical career when he studied with a leading violin teacher, who pronounced him lacking spark. "Let him go off to Yale and join the



Now that the global village is sharing an electronic culture, Madonna no doubt has accrued admirers in the remotest outposts. Transformed into a Postmodern icon, she transmits American pop culture everywhere.

Silent Vanna symbolizes the triumph of image: viewers can invest her with any attributes they so choose.

ruling class," the great master commanded. And Marshall went off to Yale. He mournfully played his "terrific French violin" with his "terrific English bow" in a campus building whose acoustics he liked. Once he told some classmates: "I don't have to study esthetics–I *am* esthetics!" "Actually, I was a little monster," he admits. Even so, he majored in English and graduated magna cum laude in 1959. His aim was show business, to become a producer.

He went to work for a Broadway and TV impresario, doing a variety of chores, from reading scripts to serving as a gofer for writer Buck Henry on the TV show *That Was The Week That Was.* Meanwhile, he was working on advanced degrees. In 1970, at the urging of his professors, he intensively studied the proceedings of a 1966 conference at Johns Hopkins University, which was the introduction of European semiotic thinking to the United States. "I didn't know what they were saying, but it wiped me out," he recalls. "My girlfriend and I went to Avignon to study with the great ones, riding around in her red VW Beetle convertible, and for me, who'd never been abroad before, semiotics got sensualized in the South of France–but what really hooked me was the realization that *everything* around us could be signs."

Marshall went on to professoring and authoring erudite articles and books on semiotics. But he got to "feeling dusty and moth-eaten," and decided to hit the road. He aimed at becoming "an intellectual in action," sort of a Jack Kerouac with a silk tie. For several years he jetted around America, Europe and Asia, carrying his semiotics concealed, so to speak, in a shoulder holster, inveigling multinational moguls and media stars to tell his tape recorder what they were up to.

The result is his latest book, *American Mythologies*, in which he shows how American myths–mass-processed into images and beamed around the world by the media–are creating the "semiosphere" in which we currently live, up to our hairlines in signs and signals. The imagemakers he interviewed, he says, are the global equivalent of the "high school fast crowd" who decide what is "in" and "out." "President Bush talked about the new world order–I'm giving you a glimpse at what it really is," he told me.

"What is it?" I asked. For one thing, it is the "Vanna Factor," which TV newscaster Ted Koppel revealed is one secret of his success. Blonsky spent three weeks hanging around the ABC studio in Washington where Koppel relentlessly grills politicians and statesmen for *Nightline*, listening in on conference calls until Koppel got him to stop, sharing pre-show pizzas and take-out Chinese dinners. And Koppel explained his theory about game-show hostess Vanna White, who has become famous, although, says Blonsky, in the early years she never spoke and appeared on *Wheel of Fortune* solely to turn over letters.

"Vanna leaves an intellectual vacuum, which can be filled by whatever the predisposition of the viewer happens to be," Koppel told Blonsky. And Koppel said that he, too, has the Vanna Factor: "In theory, I am equally tough on everyone: therefore viewers can project on me their own politics, their own views, their own predispositions. That makes me the beneficiary of a certain public acceptance that I would not have if I were, let's say, a commentator who expressed his own views on subjects."

Making Vanna whatever they want

Blonsky later put in time at the *Wheel of Fortune* studio in Burbank, where he told Vanna White what Ted Koppel had said, as she was having her hair done. He asked her if she agreed. "Absolutely," she said. "I like that. I like that a lot." She thought about it. "Because of the fact I don't speak on television, people are able to make me whatever they want me to be. It's almost like being a puppet up there. You can make the puppet say or do anything."

And what about those game shows that millions of us watch every day? I myself, for instance, usually manage to fit in a half-hour of *Jeopardy* (between writing sonnets and studying up on Kant's metaphysics, of course). Blonsky checked it out at the source, with game-show entrepreneur Merv Griffin, who said that *Jeopardy* slakes a thirst for knowledge among people "who didn't go to college, couldn't go to college." As Marshall puts it: watching the show, you get a simulacrum of education.

Wheel of Fortune has a different semiotic subtext. It is based on piecing together phrases that are part of everyday conversation, like "Boy Scout leader" or "in the public interest." It verifies watchers as Middle Americans, sharers of certain values. But Marshall discovered a Dan-

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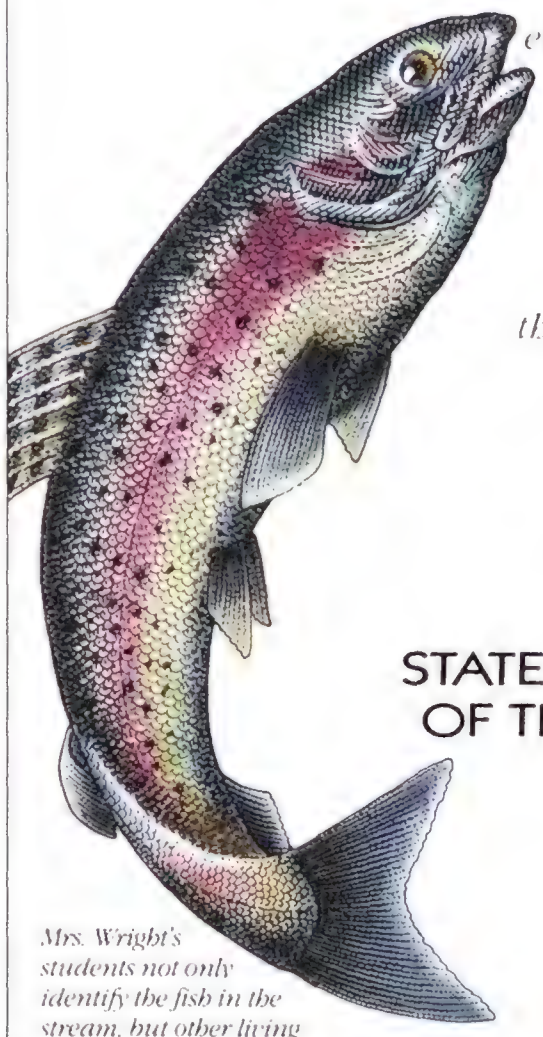

Mrs. Wright's students not only identify the fish in the stream, but other living organisms that make up this diverse ecosystem.

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tesque dimension to the show: "Vanna is Beatrice taking you through the circles of ignorance, encouraging and applauding you every time you decipher one of the riddles of the Universe." Merv Griffin told Blonsky that one secret of certain game shows is that they are designed so that viewers at home can get the answer before the contestants in the studio. "You are a hero in the living room," Griffin said. "The son-in-law they always thought was a dork . . . suddenly they will look at him in the living room and he gets it before the contestant." Game shows, says Blonsky, give you the illusion of power. And the Vanna Factor, in his reading, is a sign of a Postmodern hallmark: image over content, surface over substance.

He pressed on. From the chairman of Fiat USA, Furio Colombo, he learned that serious international moguls now pick wardrobes that combine "something European and also something American." Taking time out from marketing strategies, Colombo waxed semiotically eloquent on the multinational executive shoe: "Shoes still tend to be Italian, but whereas they used to be glove leather, perfect and smooth–the Gucci style–now they recall American shoes, which are harsher, larger, more manly, with an element of remembering New England boats and walking on the beach." Yet, those shoes are too fine and soft–"too tender"–to be strictly American. And so they signify Americanness, while also evoking the "softer, sweeter, more complacent life of Europe."

That left me looking at my own running sneakers, which are developing interesting rips across the toe area, while puzzling over what the Fiat executive's explication of shoe styles might mean. Marshall told me it means that international popular culture, formerly driven by American imagery, is increasingly heterogeneous. American myths, such as the perennially popular cowboy, may still dominate, but with modifications from other countries. Now Pecos Bill wears "tender" Italian shoes.

Speed is another characteristic of the new world order, as the semiotician reads it. Now messages and images flash around the world at photon speed. Madonna probably has fans just about everywhere. Blonsky asked an adviser to French president François Mitterrand, economist Jacques Attali, about America's influence on the world. According to Attali, America's chief influence is on the culture of daily life, with everything speeded up. "You change your cars, you change your ideas, you change your wife, you change your friends quicker and quicker," he said. "America is going faster and faster on the route where everybody is going in terms of increasing the speed of amortization of ideas, signs and goods."

In 1980s, consumers eschewed pink-flamingo-type comforts for pseudo-British baronial affluence.

Stephen King: himself a semiotician

When Blonsky visited horror novelist Stephen King, he made a happy discovery: "King is actually a wild semiotician himself!" King's macabre tales, he says, teach millions to view the emerging world culture with semiotic skepticism. For instance, King discussed his book *The Talisman*, about American hustlers discovering a parallel planet that is untouched–as yet. "The message is the Postmodern urge to 'commodify' every person and every parcel of space in the world," says Blonsky.

Blonsky didn't just talk with the glitterati. He also went to the opposite extreme and visited homeless people living in the New York City subway tunnels, which turned out to be "an underground socioeconomic nation" with its own codes of behavior. In "Subwayland," says Blonsky, "if a man is seated on the stairway, we don't ask him to remove himself; we simply sidestep him." In fact, the subways–home to the homeless–send a semiotic message, a modern image of hell. And after getting friendly with citizens of Subwayland, who sleep in the tunnels and live on coins they harvest in Styrofoam cups from denizens of the upper world, Blonsky concluded

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that the underground homeless are a living form of deconstruction: the homeless, he says, are "an invitation to question a fundamental myth, that of progress."

Meanwhile, aboveground, in Blonsky's semiotic reading, New Yorkers are "barnacled" with in-your-briefcase telephones, laptop fax-computers, Walkmans, credit cards and ATM cards that provide instant money. The message is speed and mobility. And the result is a new sort of "urban nomad," with allegiance to no particular country or company or ideology. Maybe that will reduce destructive nationalism, Blonsky says. But he is pessimistic: as we become "encrusted" with signs and attitudes generated by the imagemakers, we may lose the ability to see the human beings underneath. Semiotics, Blonsky believes, is an antidote.

But after a few days with Marshall Blonsky, I need an antidote for the antidote. I am over my head in messages. I discover that Marshall is an avid baseball fan—solid ground at last! But he says "baseball's the master way in which regional and ethnic frictions are mediated and mythically resolved." Back into the semiotic soup.

He shows me a new Times Square hotel where podlike elevators shoot up and down unnervingly fast, stopping so briefly it is hard to get in or out. "Postmodernism," Marshall pronounces. Speed! Denial of the individual! Appearance over substance!

In the hotel's vast atrium, 30-odd stories high, is a 4-story tower of girders. Inside is a huge mechanical pocket watch, spinning just fast enough to make the giant face impossible to read clearly. It stops Marshall in his tracks, like David first glimpsing Goliath. We have finally reached the danger point, I realize. Semiotic overload is imminent.

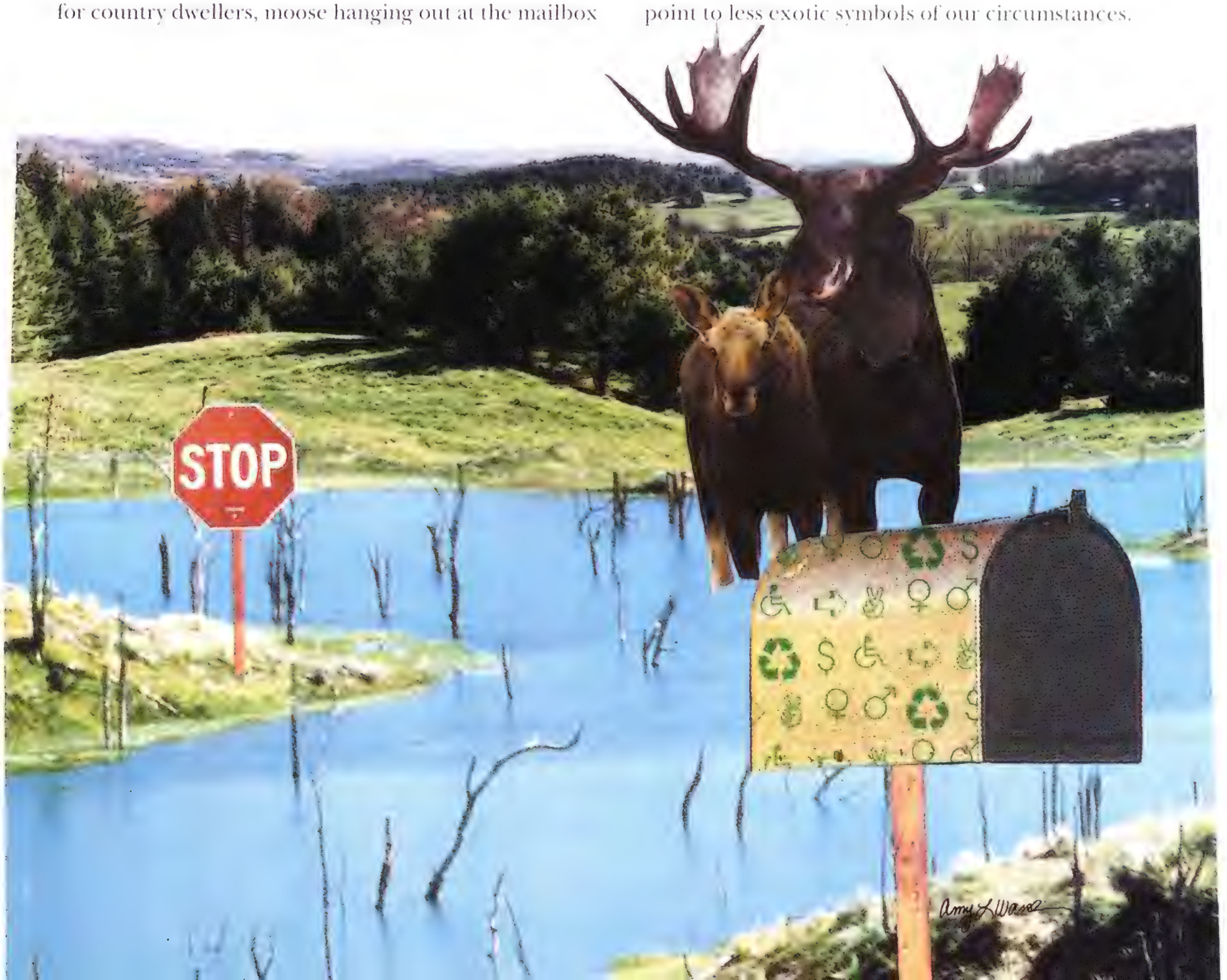
"Look! The tower encysts the simulacrum of modernity!" Marshall cries, pointing.

"The clock is revolving," he goes on, "deconstructing the reading of time, and it is enclosed in its little house, modernity imprisoned by Postmodernity!"

I flew home. Now I look at the bog behind the mailbox, where the moose wade. I am thinking of declaring this a "semiotics-free zone."

But I can't. I would have to erect a sign.

All of us, says Blonsky, exist within a welter of signs; for country dwellers, moose hanging out at the mailbox may say it all about the rural life. The rest of us can point to less exotic symbols of our circumstances.



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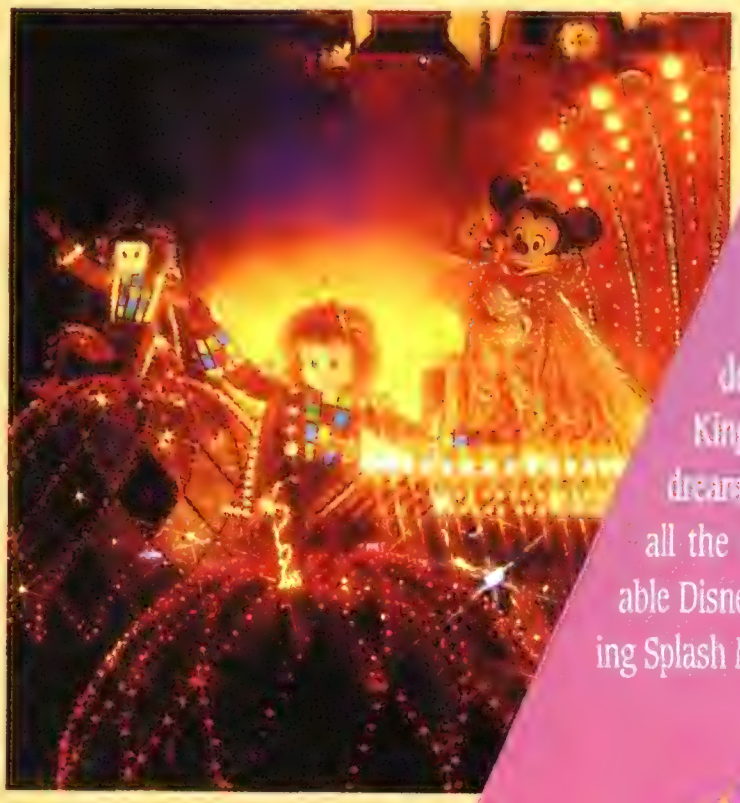

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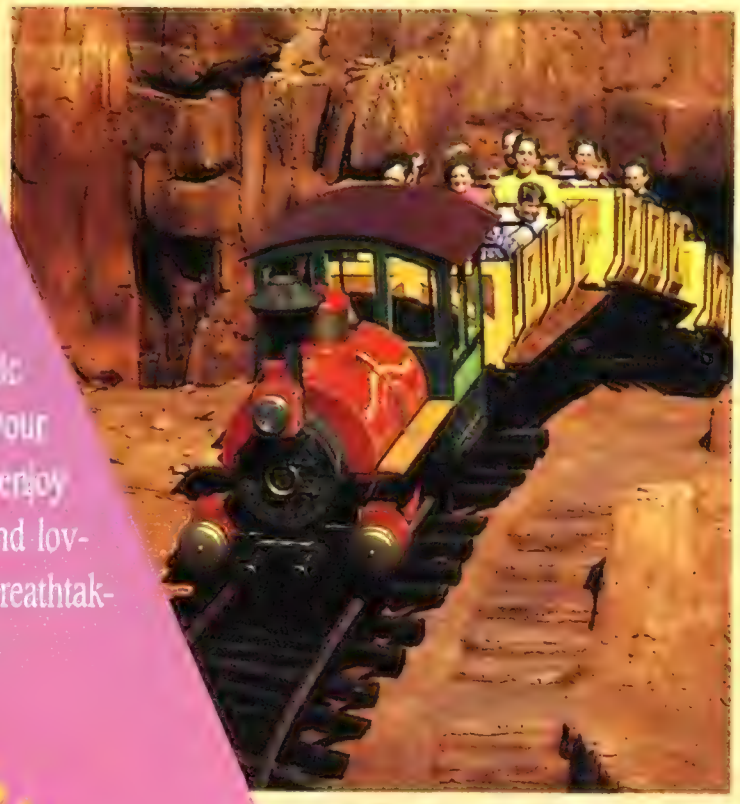

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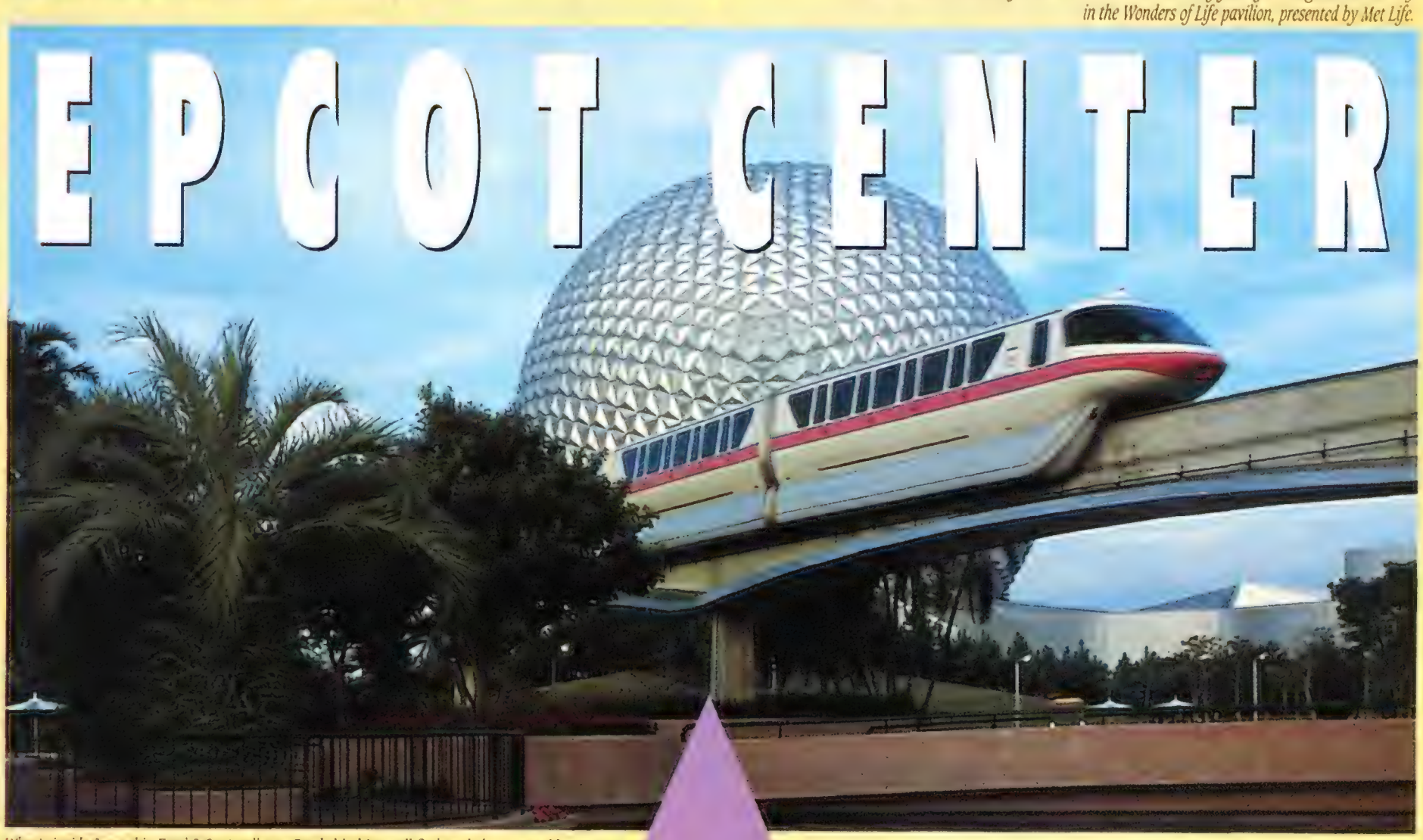

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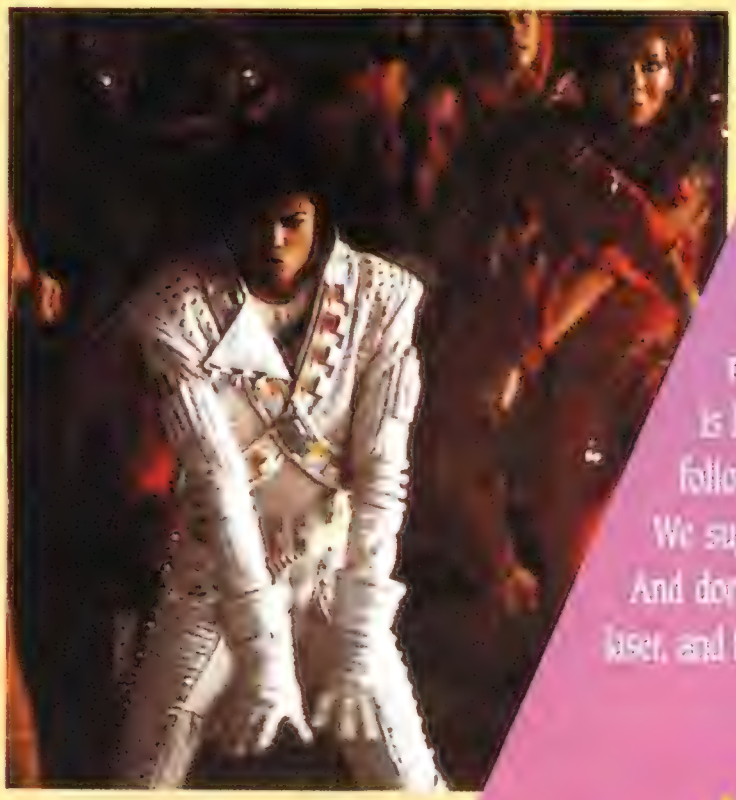

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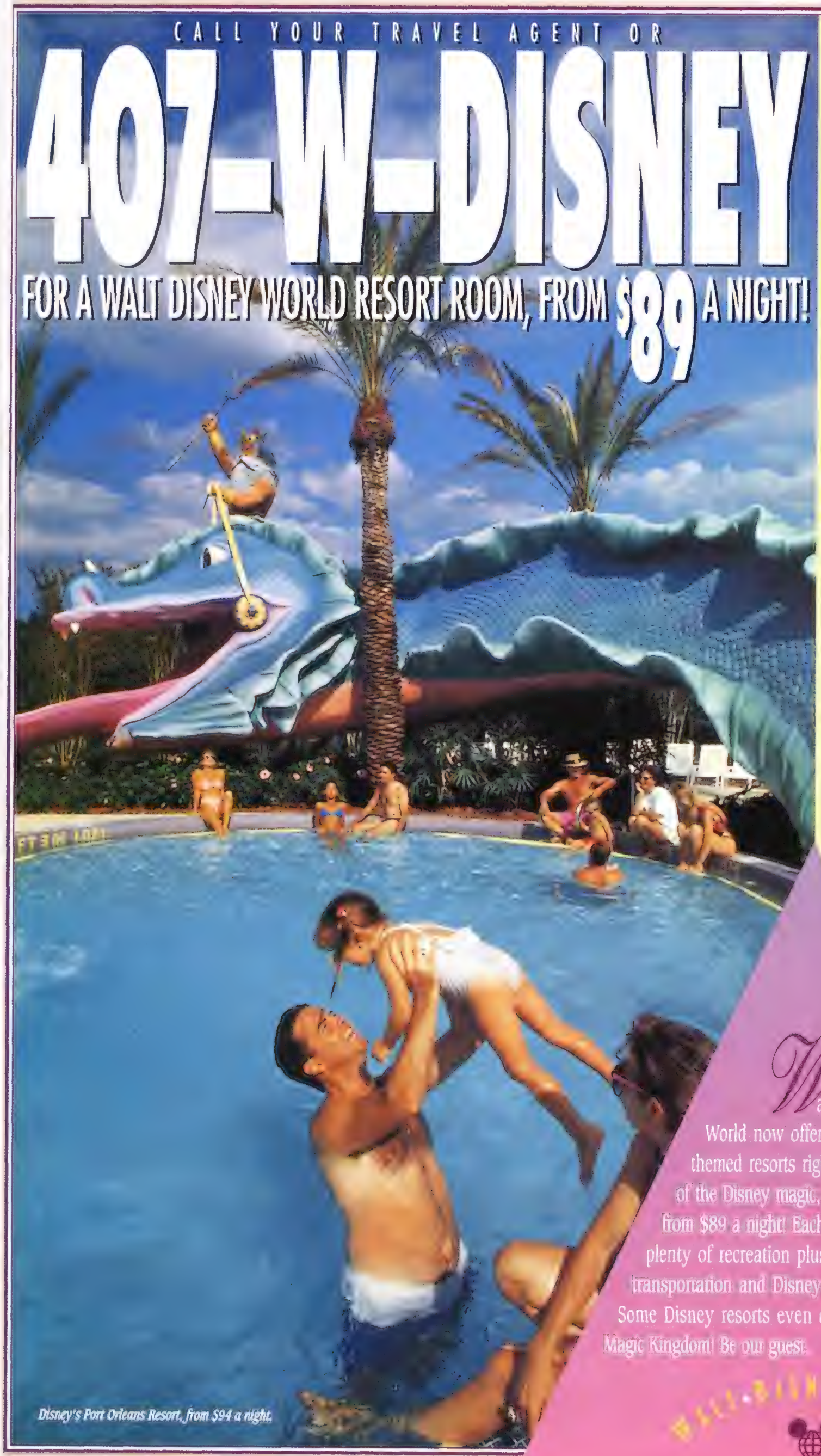

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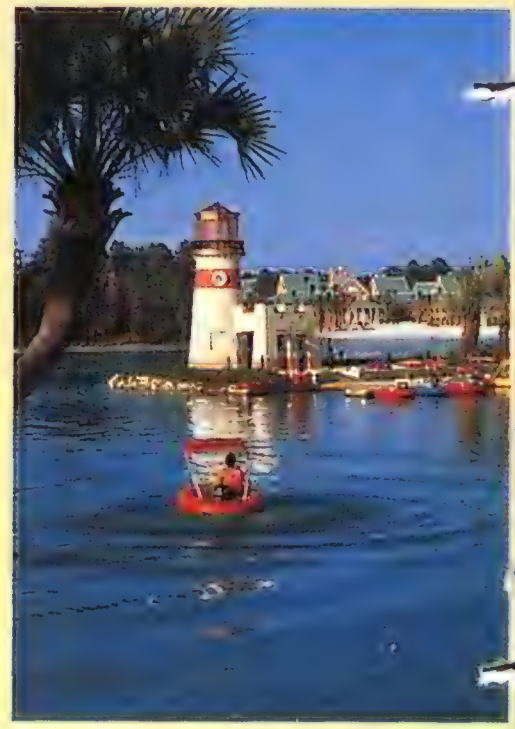

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By Verlyn Klinkenborg

If it weren't for the ox, we wouldn't be where we are

Before tractors and horses, oxen were the primary beasts of burden, and in some parts of the country they are still hard at work

Buck and Tom are oxen, oxen of the Milking Devon breed. Tom has a curly reddish coat, and on the tip of his left horn he wears a threaded brass weight, which will lower that horn to match the attitude of the right one—parallel to the ground and with a slight forward curvature. Buck's coat is straighter and lighter than Tom's, but his horns are perfect. And unlike Tom, Buck has the fine rolling eye of a zealot—a Genevan hearing the news that Voltaire has moved to town—while Tom's eye is quietly imploring. Buck is a worker. When Buck and Tom's owner, Drew Conroy, taps each ox lightly on the shoulder and barks "Come up!" in a manner that would embarrass most people, Buck and Tom drop their necks, and gravel spurts from beneath their cloven hooves and they march up Drew's driveway, pulling a 600-pound stoneboat behind them as if it were made of Styrofoam.

I am seated on the stoneboat, pretending to be a 200-pound frost-heaved boulder. Before me are the swaying hips and swinging tails of the two red oxen, a length of chain, the iron ring to which the chain is hitched and the graceful, polished slab of yellow birch—the yoke—that joins the animals. Even from this angle, it's plain to see that Buck outpulls Tom. When Tom gawks or dawdles, Buck drives forward with his head, as if what used to be called a bottle of hay were waiting for him in the mailbox at the end of the drive. But then Tom was trained as a "nigh ox," and now he is learning the "off ox" position. He has reason to gawk and dawdle.

Some definitions are in order. A stoneboat is a rough sled used to haul rocks from fields such as those in New England, where if rocks were potatoes you would never go hungry. The nigh ox is the ox that stands nearest the teamster, who always walks with his goad—a light, flexible stick—on the left side of his team. The off ox is the right-hand ox, the ox one ox away from the ox drover. (I think "ox" is a wonderful word.) Oxen are not born nigh or off, they are made. But once made—once trained to be the left-hand or the right-hand ox—they don't usually shift positions during their working lives, which may last a decade or more. To form the team of Buck and Tom, Drew took the best animals, both of which happened to be nigh oxen, from two different teams, thus confirming the old oxman's adage, "It takes two teams to make one."

You will also want to know the definition of "ox," and so you need to learn something of the terminology—and the biological fate—of cattle. A male calf is called a bull calf, especially in the dairying world, where the cattle population is largely female. A bull calf will become a veal calf, a steer, a bull or, if he is very lucky, an ox. A bull is an uncastrated male bovine. A steer is a castrated male bovine. Nearly all bull calves in the United States become steers, hence, beef, and they're usually sent to slaughter by the time they're 16 months old. (Dairy cows, bulls and, eventually, oxen too turn up in the supermarket, mainly as hamburger.) As Drew Conroy says, "Very few bovines ever end up in a hole in the ground." So. An ox is a castrated male bovine—a steer—over the age of 4 that has been trained to work. A younger ox is called a working steer.

An ox can live to a ripe old age

Technically, in the language of the ox-driving world, Buck and Tom are working steers. They are 2 years old and will probably live to be 15 or 16. Though their working lives have barely begun, they have already outlived the vast majority of their bull-calf brethren. By the time they are 5, they will have outlived nearly all the cattle of any sex—including the dairy cows—that were born in their generation.

It may surprise you to learn that oxen are not a special breed of cattle. Nor are they hybrids like mules, which are the sterile cross between a donkey and a horse. A steer of any breed may become an ox, and to confuse the issue, it was not unheard of, once upon a time, for a milk cow to be used as an ox, pulling a plow or a wagon. Now you are probably wondering how a Milking Devon can also be an ox—a castrated male bovine—which cannot, of course, be milked. The answer is relatively simple.

In the past century, the Devon breed—one of the old-

Led by ox drover Jochen Welsch, Red Top (left) and Zephaniah haul hay on a country lane in Massachusetts.

Photographs by Susan Lapides

Maine farmer Drew Conroy flicks his goad at Buck and Tom in early evening workout with exercise cart. Unlike draft horses, oxen do not require elaborate harnessing; they respond to drover's spoken commands.

est cattle breeds in the United States, dating back to 1623–has been split into two varieties, the Milking Devon and the Beef Devon, each with different traits appropriate to the production of milk or meat. In both varieties of Devon, of course, you still find all the customary genders of cattle. Usually, only the Milking Devon bull calf, a nimbler, more active animal than his Beef Devon cousin, grows up to be an ox, and he makes a fine one. In fact, the Milking Devon breed has been kept intact thanks mainly to the ox drovers of New England, who value the fact that Devons forage efficiently, learn quickly and have an appetite for work.

In Drew Conroy's neighborhood, outside Berwick in southern Maine, it's not unusual to see Drew taking his oxen, exercise cart behind them, for a walk down the road in the evenings. Drew teaches dairy farm management at the University of New Hampshire and is the author, with his colleague Dwight Barney, of *The Oxen Handbook*, which tells you in its 66 pages nearly everything that can be written down about working oxen. A young, vigorous man, purged of uncertainty, Drew is more suited to the active, farming life than to the classroom. "For me," he says, "it's relaxing to come home, yoke up my oxen and take them for a two-mile walk."

Drew has talked a neighbor across the road into letting him harrow the neighbor's field with his oxen. With the ox teams he has trained over the past two or three years, Drew has cleared stones from his own lot and dragged the logs he felled to a portable sawmill that was erected on his property. With the sawed wood and with the money he made by selling Ben and Chaz, a team of Dutch Belt oxen, Drew built an ox barn, where he stores hay and grain and his working collection of wooden ox yokes in graduated sizes. Buck and Tom live not in the barn but in a paddock down by the river where, in early October when I met the two of them, the fall leaves had saturated the air with a color nearly as deep and rich as the color of the oxen. Buck and Tom share their paddock with Emily, a year-old Milking Devon heifer, which is what you call a female bovine who has not yet produced a calf. Unlike Buck and Tom, Emily will help perpetuate the very rare breed of Milking Devons.

When Drew calls out, "Come boooossss! Come boooossss!" (the oxman's "Oyez! Oyez!"), Buck and Tom come running from the lower reaches of their paddock. They know their names and they trot eagerly to the yoke.

Verlyn Klinkenborg last wrote on matters agrarian, making hay, in September 1986. His profile of artist George Caleb Bingham appeared in March 1990.

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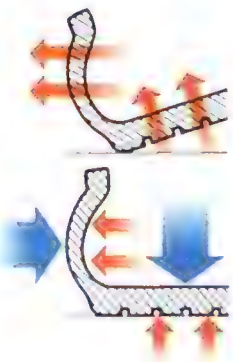

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GOODYEAR

To me, this is like being able to summon by name the trees of the forest or the birds of the air. It points up what can only be called the changing cultural history of cattle.

Since they were first domesticated in the Mesopotamian region "probably more than 10,000 years ago," according to the livestock conservationist Lawrence Alderson, cattle have been used mainly as work animals. "It's only in the last century and a half that we've bred them exclusively for milk or beef," says Drew Conroy. "Before that they were bred as oxen and their value as meat was incidental." In that time, the population of the United States, and of other developed countries, has become overwhelmingly urban, which means that cattle have receded further and further from our daily lives.

For most Americans, cattle are now merely an ornamental part of the rural scenery, or they are essentially mute commodities in an international market that is, by choice, largely invisible to consumers. It requires a complete reorientation of the modern mind to grasp that any young steer of any breed can be taken from the feedlot, given a relatively simple name and, with a little effort, be trained to come when called and to pull steadfastly behind him a wide array of farm implements. To understand oxen, you have to go backward in time.

New England has always been the home of ox driving in the United States, and in the early 19th century, up until the beginning of the Civil War, oxen were enjoying a renaissance throughout the Northeast. In 1855, for instance, the town of Sutton, Massachusetts, was "said to possess an 'ox-university'" and its farmers were reported to educate "their oxen better than their sons."

Jochen Welsch is the chief ox drover on the Freeman Farm, a re-created 1830s New England farm at Old Sturbridge Village in central Massachusetts. He dresses in period costume—rough, homespun work clothes and a straw hat—but behind his mild, wry eyes there is a thoroughly modern sense of history. Jochen is a scholar of oxen and of the culture of oxen in New England. He has interviewed most of the old ox drovers left in the region, and he has combed the agricultural literature of the 19th century for references to oxen. I met him one afternoon in late October, and we talked while leaning on the stone wall of the paddock where the Freeman Farm's oxen are kept. Though there were several purebred animals in the farm's motley herd of 11, Jochen has been trying to recreate the look of 1830s oxen, which were smaller and less distinguished, from a breed perspective, than modern oxen. With the cattle at Old Sturbridge Village, Jochen plows the fields, collects stones, gathers handmown hay and drags logs out of the surrounding woods.

Rangy team strains to drag 4,500 pounds more than 400 feet during a pull, or contest, held in South Hiram, Maine. The black-and-white animal on the right is a Holstein-Ayrshire cross; the other is a Red Durham.

HOW THE COUNTRY GETS THINGS DONE

ONE IN A SERIES

Last summer the only full menu restaurant in Cherokee, Oklahoma closed its doors. So the town's rural electric co-op went right to work, helped raise $25,000 from local investors and got a new restaurant into business. It employs 13 and is already exceeding profit projections. Small potatoes? Not for folks in Cherokee. Farther north, there's Soyland Power Co-op in downstate Illinois. Here the co-op helped a family-owned popcorn warehouse expand its operations. But that warehouse is just one of the many businesses to benefit from co-op initiatives that stimulate the local economy. For example, $320,000 in Soyland community development loans have helped 24 businesses generate $5 million in economic growth, which isn't peanuts. Keeping local businesses in business, and helping others get started—it's no small part of the big job America's rural electric co-ops are doing in Oklahoma, Illinois, and all across the country.

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In pre-tractor days, a New York farm family yoked their working cattle to a cutter and other machinery.

Condé Museum, Chantilly

A 15th-century illustration shows medieval farmer plowing field near French castle with a yoke of oxen.

Jochen explained that the presence of oxen nearly always surprises visitors. They expect to see draft horses. "In England," he said, "oxen were still the primary beasts of burden up till the 1500s. Horses began to win over after that, but in the 18th century progressive farmers urged going back to oxen, mainly because of the economy involved. In our culture we don't eat horse meat, but we do eat beef. The interesting thing is that in England during the 18th and 19th centuries they were saying if we go back to oxen, we have to go to the United States, especially New England, to see how it's done."

In the records of the U.S. Census Bureau, Jochen has discovered that "until 1850 all New England states with the exception of Vermont counted more working oxen than horses." Even as late as 1890, the last year the Census Bureau kept statistics for working cattle, there were more than a million oxen on farms across America, some 6 percent of the nation's draft animals. In New England in 1890, oxen still totaled 23 percent of the draft animal population. They were popular too in the upland South as well as in the rice-growing regions of the Carolinas, where their cloven hooves gave them better traction on wet ground than mules or horses.

In the 18th and 19th centuries, farmers compared horses and oxen the way they compared horses and tractors in the early 20th century. The historical contest between horses and oxen turned partly on practical distinctions long since lost to most modern farmers, but it also turned on cultural considerations. Regional pride and national patriotism were often cited as arguments on behalf of oxen. *The Massachusetts Agricultural Reposi-*

Horses were used increasingly after the Civil War as farm implements became lighter, but when the pioneers headed West, they chose oxen to pull their wagons, as depicted in 1870s engraving (above) by Felix Darley.

tory and Journal for 1821 exhorted readers to remember the "essential service New England's ox teams had performed in the decisive victory over Cornwallis at Yorktown" during the Revolutionary War. But after the Civil War, as agricultural machinery grew lighter, "our culture's pro-horse bias," as Jochen puts it, won out, at least until our pro-tractor bias triumphed once and for all.

An ox may have what in 1859 one agricultural writer called an eye "full, keen, and pleasant," but most of us remember only the phrase "dumb as an ox," which is a phrase a good ox drover would never use. "You can work a horse to death," says Jochen, "but you can't work an ox to death. It'll just stop and say to hell with you. So which is the smarter animal?"

There are some significant differences between horsepower and oxpower, differences more telling than the curious fact that "horses gratify our vanity," as an 18th-century farm writer put it, and oxen don't. Dick Roosenberg is the head of Tillers International, an organization in Kalamazoo, Michigan, that promotes the use of draft-animal power. He points out that there are still, worldwide, something like 400 million draft animals at work and that the majority of them are oxen. "Oxen are better than horses in rough terrain," he says. "They don't try to use momentum in the same way horses do. A team of horses will try to force their way through obstacles. There's slower motion in oxen but greater torque." In the 19th century, a prosperous farmer might well have kept an ox team and a horse team, though he would have used them for different applications. Horses move faster than oxen, and so they do well at pulling a plow in clean fields. Oxen do better when breaking sod or working in a woodlot or at almost any task that requires steadiness and patience rather than speed.

Horses also place different demands on a trainer than oxen do. "Once oxen get to be around 5 or 6 years old," says Jochen Welsch, "you don't have to do much with them anymore. They remember it. Horses are much more high-strung animals and they need the work."

Oxen are less susceptible to disease than horses, and they adapt better to very warm and very cold climates. In strictly economic terms, oxen are cheaper than horses in nearly every way. It often costs less to purchase a yoke, or pair, of oxen than a single horse, especially if they are bought as calves and, as Jochen says, a single horse "eats more than half the feed eaten by a yoke of oxen." And there is always what might be called the terminal economy of cattle to consider–the fact that an ox can be sold for the prevailing price of beef.

The most distinctive difference between horses and oxen is the equipment they use. A draft horse's harness is exceptionally complex, a virtual web of leather, and a good horse collar is something only a skilled artisan can make. To drive an ox team you need no reins, no harness, nothing that ties you to the oxen. You simply walk along beside them. The yoke itself is little more than a nicely undulating piece of yellow birch punctured by the end of two bows that fit under and around the oxen's necks. Almost anyone can learn to carve an ox yoke with traditional tools or with a chain saw and a power grinder, and the bows are simply steam-curved pieces of wood, usually hickory, cut in February so the bark stays

An Italian farmer tends his Chianina oxen in a barn near Florence. Said to be the largest of all the bovines, Chianinas can weigh nearly 3,500 pounds apiece. The Romans, it is said, used them to pull cannon.

on them. In poorer regions, single ox yokes, sometimes made from a forking branch, are not uncommon. And in Nova Scotia, where there is still a vibrant ox-driving tradition, oxen wear what are called horn or head yokes, which have no bows. Instead, the yoke is strapped directly behind the ox's horns. Unlike the polled or dehorned cattle Americans see everywhere these days, all Nova Scotia oxen wear horns.

The simple equipment required for ox driving is one reason oxen became so popular during the Westward expansion in the mid-19th century. According to one historian, Spanish carretas pulled by oxen brought from Spain to the Rio Grande in 1590 were the "first wheeled vehicles to enter what became the United States." All through the Spanish Southwest, supply wagons were pulled by oxen, and the first military escort to accompany travelers down the Santa Fe Trail in 1829 was not a band of cavalry but an ox-drawn team of soldiers. When the Westward migration over the Oregon Trail reached full swing, a traveler would have been surrounded by oxen drawing a multitude of wheeled vehicles: Conestoga wagons, rough farm wagons, two-wheeled Red River carts built by the Métis and drawn by a single ox. During the later waves of the Mormon migration, you could have seen wagons pulled by a yoke of milk cows. In the East the Conestoga freight wagons were pulled almost entirely by horses, but in the West the commercial freight animal of choice was the ox. At any time, the freight-contracting firm of Russell, Majors & Waddell owned as many as 75,000 oxen, which were impelled on their way by "bullwhackers" who, like muleskinners, had a reputation for efficiency that was second only to their reputation for cursing.

Oxen had only one real drawback on the Western trails. A mule's hoof (and the mule was the ox's only real competition in the West) is harder than an ox's hoof, and on the trail there were no shoeing stocks—rough wooden cages used to lift and balance an ox while his feet are shod. So bullwhackers and settlers alike turned to some rough expedients. They wrapped their cattle's feet in boots of buffalo rawhide, or they dug a shallow trench and laid the ox on its back, legs pointing skyward so the farrier could get at them.

In 1842, the *New England Farmer* declared, "A real Yankee always likes to see a good pair of oxen pull." A hundred and fifty years later, that's as true as it ever was. Oxen do less and less real work in New England—the few with daily jobs are found mainly in small, family logging operations—but they still march in the ox parades and compete at the ox pulls that are a staple of country fairs.

Last fall, I visited the extravaganza at Fryeburg, Maine, with Drew Conroy, who travels throughout New England judging and narrating ox contests. Not far from the midway lies the arena where the horse- and ox-pulling contests take place, and beyond that there is a row of low barns with wide stalls on both sides of a center aisle. On that day in October, the barns were full of oxen, immaculate matched pairs of animals standing or lying side by side, like the bunkmates they are. In the space between the barns and the pulling arena, the crowd of fairgoers waded through a constant stream of ox teams, which were moving with a gentleness and quiet that was extraordinary. There were yokes of Shorthorns, of Ayrshires (which Drew pronounces "Ash-ears") and of downy Brown Swiss with soft faces. There were Red Holsteins and black-and-white Holsteins (the familiar dairy cow) and there was a Brown Swiss-Texas Longhorn cross. There were yokes of Milking Shorthorns (also called Durhams) crossed with nearly every other breed, and yokes of Herefords (the common rust-and-white

"Yecch!"

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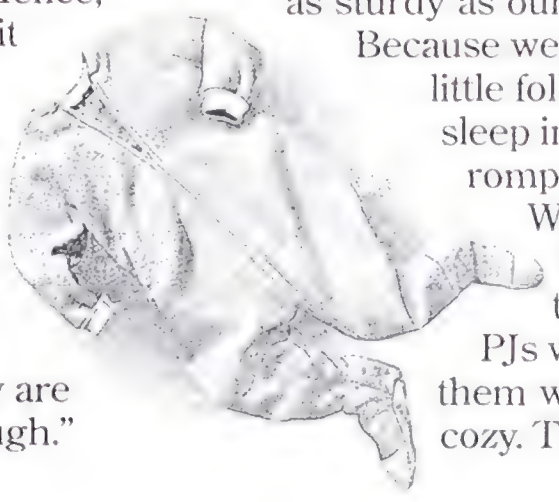

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Teenager Jennifer Brooks grooms Steve, a handsome Ayrshire, during break at Ossipee Valley fair in Maine.

beef breed) with an unfamiliar shape, boxier and more athletic than the range Herefords you see. And just when I had gotten used to the sight of so many oxen in one place–team after team of them–I would come across a pair of Holsteins that were larger than any cattle I'd ever seen before–larger, that is, until I saw the Chianinas, which are an enormous white Italian breed said to be the largest bovines on Earth.

The Chianinas and Chianina-Holstein-cross steers, some of them weighing nearly 3,500 pounds apiece, loomed over me as I reached up to pet them. Beyond the barns, oxen stood tethered to trailers or lay in the shade of a school bus or tractor-trailer that had been turned into an ox transport. Some oxen were being idly stroked by their teamsters, and parents were lifting their children to touch the wet muzzles of the beasts.

In one barn, I met Derek Duckworth, age 4. Derek (opposite) was the youngest teamster at the fair, and his two Durhams, Buck and Charlie, were themselves only 4 months old. Derek led Buck and Charlie, who were wearing a tiny yoke, out of the barn and demonstrated the teamster's commands with the peremptoriness of a 4-year-old. "Get up!" he barked in a voice smaller than Drew Conroy's but with the same intonation. "Gee! Gee! Gee!" he barked when he wanted Buck and Charlie to turn right. "Haw! Haw! Haw!" he barked when he wanted them to turn left. "Whoa! Whoa! Whoa!" he barked when Buck and Charlie threatened to run over a spectator.

Derek's team was striking proof of something Drew had told me earlier in the day. You can begin training a bull calf to be an ox when he's a day old. In fact, it's much easier to train oxen as calves than it is when they've had the run of the pasture for a while; the younger they are, the sooner they form a bond with you. If you teach a calf to obey the teamster's five or six simple commands when he weighs only 150 pounds and can be led easily in a halter, you won't have to fight with him when he weighs a ton.

"Mom and Dad can't train them for you"

In front of the grandstands, the 4-H teamsters had assembled, and they were being judged by the coauthor of *The Oxen Handbook*, Dwight Barney. Looking down the long line of ox teams and teamsters (both boys and girls waiting to perform), you could see the heads of some teamsters poking above their cattle, but other drovers were dwarfed by their oxen. One by one, the teamsters led their cattle out, hitched them to a sled with five concrete weights on it and took the team through a maze.

As we watched, Drew leaned over and said, "When I talk to 4-H groups I tell them that if you're going to show dairy or beef cattle at the fairs, how you do in the ring is based on how much you spent. The better genetics you purchase, the better you're going to do later on. But with oxen it's not like that at all. You might have a mongrel pair, but if they're well trained you could have a prizewinning team at the state fair. And Mom and Dad can't train them for you, since oxen work best with the person who trained them. The biggest thing a child learns by training oxen is patience. If oxen are beaten, there'll come a point where they just won't go."

As the cattle lined up again, facing the grandstand, over the loudspeaker came Dwight Barney, commenting on the performances one by one, his voice booming and slapping in the dry, autumn air. "No. 27, he gave a good turn in the haw. The gee not quite as good as the haw turn. I'd like to see him use the stick a little bit less. I'd like to see them controlled with the voice."

Beyond the ox barns, the doors of the pulling arena had been flung open, and teams of draft horses were prancing out, snorting and puffing as they passed the line of oxen waiting quietly to enter the arena. The air inside the arena had taken on an amber tinge, like an agricultural painting whose varnish had yellowed with time. As the ox-pulling crowd filed into the arena, the oxen and their teamsters lined up along one wall of the pulling floor. These were the preliminary trials, and each team was required to pull a weighted stoneboat 12 feet in order to enter the next round. Each teamster had

three minutes to get his team hitched—a matter of hooking a chain to the ring that dangles from the yoke—and drive them forward between two lines. As Drew and I watched, the event established a serene rhythm of its own that was disturbed only as a teamster approached the starting line and tried, simultaneously, to get his cattle excited and to restrain them enough to be hitched.

Over the public-address system came the voice of a laconic female announcer. "Twenty-five hundred on the boat," she said, though in the final rounds a team of oxen weighing 5,000 pounds would be pulling 15,000 pounds on the stoneboat. "William Powell on deck," she said. "Ice cream, ice cream!" cried another voice, and then, as if from far away, you could hear the teamster exhorting one of his oxen: "Duke! Duke! Duke! Duke!" The cattle hunched and drove forward, their bodies forming a single lean curve of power as the stoneboat skipped ahead. "OK," said the announcer, and the team came to rest, barely winded.

Watching the ox pulls, I thought of something an old teamster said in a book called *In Praise of Oxen* by Terry James: "I know oxen is wonderful things in my life. I was here a couple of weeks without 'em, why, I was lost. I had to go buy another pair. And that's the way I guess I'll feel till I can't get around to look after 'em."

In one way or another I've been among animals all my life, and over time I've learned that there is almost no closer bond on Earth than the one that exists between a human and an animal that works along with him. About an ox's existence Drew Conroy says, "It's the best life any steer will ever have." But at Fryeburg, surrounded by hundreds of warm-eyed oxen and their teamsters, it occurred to me that a life among oxen might be one of the best lives any human could have, as well. In the eyes of dogs, you can sometimes see a reflection of the human order of things. In the eyes of horses, you see it too. How extraordinary it seemed to see that reflection in the eyes of oxen, where I had never thought to look for it! It was a reminder to me of how easily we set aside the past, and how poorly we grasp the present, as if all history were a race to set aside our obligations to the animal kingdom. "If draft animals hadn't cleared the forests, built our stone walls, carried settlers Westward," said Drew Conroy, "we would not be where we are."

Derek Duckworth, now 5, shows off 1-year-olds Buck and Charlie at the family farm in North Berwick, Maine. He and his animals won the blue ribbon at a fair last year, competing in a special event for young teamsters.

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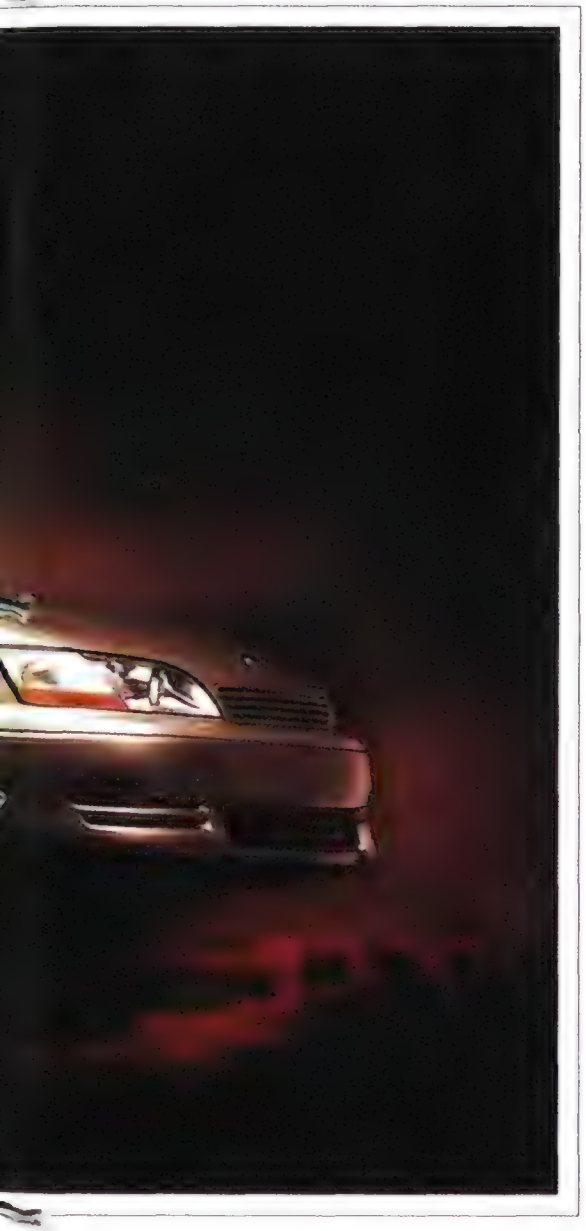

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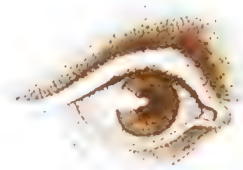

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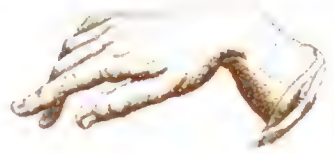

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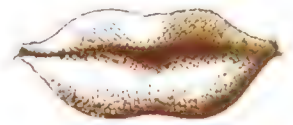

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By Jon Krakauer

Denver: the cow town with culture, and proud of it

Strapped for funds, this city bit the bullet and voted to renew its century-old art museum; now the decision has paid off

At the southern perimeter of downtown Denver, where the dazzling skyscrapers of the metropolitan core give way to the low sprawl of auto-repair shops and parking lots, there looms one final, solitary high rise, stark and forbidding, sheathed in thousands upon thousands of tiny gray tiles. Few windows penetrate the structure's asymmetric, fortresslike facade. The handful of slit-shaped openings that do exist are reminiscent of gun ports and seem to be scattered randomly across the edifice without discernible logic.

Fans of the building—designed by an underappreciated Italian architect, the late Gio Ponti—crow that it's the most distinctive piece of contemporary urban architecture between Chicago and San Francisco. Its detractors complain that it looks like a computer punch card or a missile silo or an overgrown shower stall turned inside out. But if Denverites can't decide whether their gray-tiled Bastille is an eyesore or an architectural masterpiece, they share intense, near-universal pride in the institution sheltered within its imposing walls: the Denver Art Museum.

At present, early on a crisp morning, a boisterous queue of art lovers stretches from the museum's front entry all the way around the block. The doors aren't due to open for another hour, but today marks a special occasion for the Denver Art Museum, and anticipation is running high. Although the quirky structure that currently houses the museum wasn't completed until 1971, the institution itself has been exhibiting outstanding artworks since 1893. This morning, to celebrate its 100th anniversary, the museum will reopen three of its most important and popular galleries, which have been closed for the past two years to accommodate an extensive $9.3 million redesign and renovation. Before the day is out, more than 12,000 Denverites will crowd through the museum's doors to have a look.

Admittedly, when most of the country thinks of mag-

The Denver Art Museum moved into Gio Ponti's quirky building (above) in 1971; in foreground, Red Grooms' *Shoot Out.* Conservator Carl Patterson (opposite) puts final touch on a Spanish Colonial sculpture of a saint.

Photographs by James Balog

Ceramic effigy head from Costa Rica (above) is put on display with 5,000 other Pre-Columbian works. In Northwest Coast Gallery (opposite), a group of older objects faces Douglas Cranmer's 1987 post carving (right).

nificent art and distinguished museums, Denver is not the first city that comes to mind. Denver, as it exists in the popular imagination, is ranching and legendary skiing and lean times in the oil patch. Denver is a football team with the unfortunate habit of getting blown out of Superbowls. Denver is a rough-and-tumble burg with calluses on its hands and manure caked to its boots, not some artsy bastion of high culture and salon society.

Lewis Sharp, the director of the Denver Art Museum, a transplanted New Yorker who looks like a thoughtful, underweight Santa Claus, makes no apologies for the city's reputation. "In many ways," he concedes, "Denver is a cow town. But we who live here see that as an attribute, not a shortcoming. The West is what's most wonderful about America. When people visit this country from Asia, from Europe, it's the West that they most want to see, it's the West that conforms most closely to their image of the real America. Big spaces. Rugged mountains. The immensity of the plains. People, in short, are attracted to Denver precisely because it's a cow town, because Denver is the West. Likewise, people are drawn to the Denver Art Museum in large part to see the art of the American West. And they are not disappointed."

Before taking the Denver job in 1989, Sharp toiled for 17 years as a curator at the Metropolitan Museum of Art in New York City. "At the Met," he explains, "in a certain sense we tried to remake the Louvre. The directors of the museum didn't really like American art. Here at the Denver Art Museum, in marked contrast, we're emphatically American. We have a wonderful European collection, a very fine Asian collection, but when it comes to the arts of the Americas, boy oh boy, we've got it in spades! Denver's collections of Native American art, Pre-Columbian art and Spanish Colonial art are among the finest in the world."

Denver's preeminence in these spheres is a legacy that dates from the museum's earliest days. In 1893, just 17 years after Colorado had been granted statehood, a group of local artists founded an organization "for the advancement of art interest in the city of Denver." Among the earliest members of the Artists' Club, as the institution that would one day become the Denver Art Museum was initially christened, was Anne Evans, daughter of Colorado's second territorial governor. Miss Evans was an amateur painter, which is what won her an invitation to join the fledgling museum, but she was also a woman of means and an avid collector of what she termed "barbaric art": objects of exquisite beauty created by the aboriginal peoples of the American West.

Evans was hardly the sole collector of Indian art during that period of American history. Indeed, in the final decade of the 19th century and the first two decades of the 20th, large ethnographic museums such as Chicago's Field Museum of Natural History and New York's American Museum of Natural History were systematically acquiring the contents of entire villages, amassing hundreds of thousands of Native American objects with almost feverish intensity. These major museums were

concerned with the anthropological significance of the artifacts they collected, however, not esthetic merit. Indian art qua *art* was a concept beyond the ken of most curators of the day; it simply didn't occur to them that some of the pieces passing beneath their gaze would one day be understood to be masterworks.

As a collector, Evans' sensibilities were very different, and way ahead of her time. Unlike most of her contemporaries, she was quite selective about her Native American acquisitions, and she based them on esthetic considerations alone. In the words of Richard Conn, Denver's longtime curator of Native art, "Evans only collected something if she thought it was beautiful. And she communicated her enthusiasm for the best Native American and Hispanic folk art to her friends, and inspired them to start collecting with a discriminating eye as well." Most of the objects acquired by Evans and her cronies were eventually bequeathed to the Denver Art Museum, forming the nucleus of its extraordinary collections.

Given the unique focus of the Denver Art Museum from its inception, and the fact that it has long been situated at an important nexus of Native American culture, Hispanic culture and the raw spectacle of the American frontier, it perhaps shouldn't really be so surprising that Denver—cow town or no—is at the forefront in exhibiting the arts of the American West. What is much more surprising is that the museum leads in other fields as well. Most notably, the Denver Art Museum is respected far and wide for having the most innovative department of museum education in the United States.

Telltale signs of the educators' handiwork are in evidence at every turn. Throughout the weekend of the centennial reopening, for instance, the museum is prowled by feral packs of pint-size jaguars—children wearing jaguar masks and paws, assembled with their own hands from simple paper kits (p. 100). To grown-up passers-by the masks are charming, but their primary function is to plant in youthful museumgoers a germ of appreciation

A frequent contributor to SMITHSONIAN, *the author most recently wrote on the Alaska Highway (July 1992) and glass artist Dale Chihuly (February 1992).*

After making masks at the Kids Corner, children will roam the galleries in search of artworks with a jaguar motif. The drop-in art-making center, located in the lobby, is typical of the museum's outreach efforts.

for Pre-Columbian art, which happens to be represented by a showcase collection at Denver.

As the youngsters paste together their feline alter egos, they are taught that "a long time ago, people of the Americas wanted to be like jaguars. . . . To remind themselves of how strong and clever the jaguar was, they made objects shaped like jaguars or decorated with jaguars. There are hundreds of jaguars on objects on the fourth floor of the museum. . . . See if you can find a jaguar taller than you; a jaguar smaller than your little finger; a friendly jaguar; a scary jaguar. Which jaguar is your favorite?"

Virtually every museum in the country pays at least lip service to educating its public, but rare is the art museum that makes it a genuine priority. "Too many people who run museums don't view their institutions as places to be introduced to art," bemoans Patterson Williams, the Denver Art Museum's tireless and highly lauded dean of education. "The implicit message to the public is, first go out and get yourself educated about art, and once you've done that you'll be ready to come in and appreciate our beautiful objects. That kind of attitude can make a museum an extremely intimidating place to visit."

In fact, recent surveys indicate that many of this nation's museumgoers are intimidated by the experience. A study of visitors to the Denver Art Museum revealed that some 70 percent considered themselves "art novices" who loved art but knew little about it—the kind of people, according to Williams, "who are moved to tears when describing their most powerful experiences of art but mispronounce the artist's name." It angers Williams when such visitors are made to feel embarrassed or inadequate; she believes it is the duty of museums to respect any enthusiasm for art, however nascent or untutored, and help that enthusiasm blossom into a fuller, richer appreciation.

Which, she concedes, is easier said than done. "It's not enough simply to bombard visitors with information," Williams explains. "You don't want to surround objects with so much explanatory text that you create what I call a 'guilt wall' that makes people wonder if they're going to be given a pop quiz. Information shouldn't distract from the art itself. It shouldn't intrude on the experience of connoisseurs and serious scholars, either."

"The first time I gave her a diamond ring chills ran up both our spines."

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Museum director Lewis Sharp looks over exhibit that compares four casts of Remington's work *The Cheyenne.*

Patterson Williams–here, with Japanese tea ware used for in-gallery demonstrations–is dean of education.

In Denver, to help Williams and her fellow educators fulfill their duty to the public, Director Sharp has taken the radical step of making educators and curators equals and collaborators. It's considered radical because in the traditional museum hierarchy the bulk of the status and power is held by the curators alone–the scholars who obsessively acquire, categorize and protect a museum's cache of objects. Educators–those responsible for the instruction and nurture of the public–have historically been treated as second-class citizens with little or no influence on museum affairs.

Sharp confesses that until recently he, too, failed to give educators their due. He underwent an abrupt change of attitude shortly after coming to Denver from the Met, thanks to an extensive study (conducted by the Getty Center for Education in the Arts) of visitor experiences at 11 major museums. "The Getty report," says Sharp, "knocked me out of my chair. It wasn't very positive. It made it clear that many people were rather dissatisfied with their visits to American museums. It became obvious to me that if we had been trying to sell a product, we would have long since gone out of business."

At the time, the Denver Art Museum was beginning to lay plans for the renovation of its Asian, Pre-Columbian and Spanish Colonial galleries. At the Met, says Sharp, who oversaw that museum's huge American Wing, "we curators would design shows without any input whatsoever from the educators. In Denver, preparing for this major renovation, I decided to make the museum's educators an integral part of the design process right from the very first step. An educator, a curator and the designer worked as a team to create each installation. They developed a concept together, selected the objects together, devised educational programs together. And what they ended up with is absolutely dynamite."

Information please, without the overload

One of the first things a visitor notices about the new galleries is that there are very few labels visible to distract from the objects on display. "Yet," boasts Sharp, "there is probably more information in those galleries than in any exhibition in America." The explanatory texts are simply kept out of sight, on paddles tucked cleverly into hidden slots, until visitors want to consult them. For those who want still more information, there are browsing areas near each gallery where visitors can sit down and study reference works or watch videotapes.

"We've tried to accommodate all kinds of visitors," Sharp says. "If you want to come in and contemplate an object on your own, without being subjected to a barrage of material from curators telling you how to look or how to think, you can do that in Denver. But if you're the kind of person who craves a wealth of background information, you won't be disappointed, either."

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Among Denver's other cultural watering holes is the Tattered Cover Book Store, with its homey ambience.

Wandering the galleries, a visitor to the museum bumps into one educational innovation after another. On the third floor, a Paiute named Delmar Stevens, surrounded by Navajo rugs and Pomo headdresses, demonstrates the craft of flint knapping by fashioning scalpel-sharp arrowheads from lumpy shards of obsidian. In the fifth-floor Asian Gallery, awestruck visitors don Samurai armor and handle replicas of fearsome Samurai swords. On the sixth floor, artist Marilyn Duke paints a landscape in the Impressionist style among bona fide masterpieces by Renoir and Monet.

Perhaps the most intriguing of Denver's new educational efforts is a small exhibit, off the museum lobby, mounted for the centennial. Christened "Collecting, Preserving, Interpreting," it manages to convey to the public, succinctly and clearly, exactly what it is that a museum does, and why. Why, for instance, did the museum acquire that weird contemporary sculpture–a velvet-lined harp case filled with candles–by Donald Lipski? A short video provides the answer via an interview with the artist, in which Lipski's difficult avant-garde work is compared with *Examen de danse*, a popular Degas pastel.

And why did the museum acquire this particular version of Frederic Remington's bronze *The Cheyenne*, rather than some other? Four borrowed casts of the same sculpture arranged side by side show an almost shocking range of quality, demonstrating quite plainly why the curators selected the version they did. One leaves the exhibit convinced not only that the Emperor really is wearing clothes, but that his taste is impeccable.

An unlikely windfall of public funds

After only a short time in the galleries, one comes to sense that the Denver Art Museum is on a roll. Sharp, Williams and their corps of able colleagues deserve kudos for the museum's state of rosy health, but the institution has also had the good fortune to receive an exceedingly unlikely windfall of public funds. Frederick Mayer, chairman of the museum's board and one of the institution's most generous private donors, somberly confesses, "Without the tax money, instead of flying high we'd probably be shut down and the lights would be off."

The tax money to which Mayer refers, and how it came to be earmarked for the museum during the depths of a grim regional recession, speaks volumes about the city's attitude toward the arts. The story has its origins in the late 1970s and early '80s. Denver was booming at the time, riding a fat wave of oil money that looked as if it would never end. Speculation in real estate and energy deals created overnight millionaires. New skyscrapers sprouted like dandelions after a spring rain. There was so much wheeling and dealing that Hollywood based a modest little television series on all the local action: thanks to *Dynasty*, the Denver skyline became familiar to couch potatoes around the world. Then, in 1986, the price of oil collapsed, construction slumped, and the city went into economic free-fall.

Unemployment soared, bankruptcies proliferated. Houses that had just been purchased for $250,000 suddenly lost one-fourth of their resale value. Most of the elegant new office towers went wanting for tenants; the glut of unwanted commercial real estate on the market created vacancy rates as high as 30 percent in some parts of town. Public coffers shrank. Money for civic institutions dried up.

In 1988, at the nadir of this ugly downturn, a local businessman named Rex Morgan had the temerity to propose a new sales tax to provide permanent funding for the region's scientific and cultural facilities. Local pundits thought Morgan had lost his mind. As a state, and by long tradition, Colorado was notoriously anti-tax.

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Centennial birthday cards in a variety of media were sent in by more than 450 artists, thus becoming the museum's newest art collection.

The hard-pressed citizens of Denver, the experts insisted, would never vote to increase their own taxes in the midst of a terrible recession, especially to fund a bunch of museums. When proponents of the tax asked local politicians to support the ballot measure, few were willing to lend their names, believing it to be both a doomed cause and political suicide. "You want me to endorse a tax increase?" went the typical response. "To fund the arts? What have you been smoking?"

The vote was held on November 8, 1988. When the ballots were tallied, to the surprise of almost everyone Denver and its adjacent counties had approved a 0.1 percent increase in the local sales tax to fund the zoo, natural history museum, art museum, botanic gardens and a number of other cultural organizations. More astounding still, the tax measure had garnered three "yes" votes for every "no" vote. "Nothing ever wins by that kind of margin," says Mayer with a wry smile. "The morning after election day, every politician in town wanted to jump on our bandwagon." The Denver Art Museum's share of the largesse amounted to some $2.5 million per year.

Evidence of Denver's rich cultural awareness is by no means restricted to the far-fetched success of the 1988 tax measure and the national esteem enjoyed by the art museum. There is the Denver Performing Arts Complex, a downtown institution housing nine theaters, second only to New York's Lincoln Center in audience capacity. There is the proposed Civic Center Cultural Complex—an ambitious partnership between the Denver Art Museum, the Denver Public Library and the Colorado Historical Society—currently under design by the noted architectural firm of Venturi, Scott Brown and Associates. Especially there is the Tattered Cover Book Store, a cherished Denver landmark since 1974.

Frequently cited as one of the two or three best bookstores in the country, the Tattered Cover has an active inventory of 221,000 titles and a beloved owner, Joyce Meskis, who refers to the store as a "social experiment." The comfortable, occasionally threadbare easy chairs scattered around the multistory premises invite extended sampling of the merchandise; readers line up for the analyst's couch in the psychology section. Out-of-state checks are cashed without question. Special orders pour in from as far afield as Antarctica. During the Christmas season, loyal customers vie for the privilege of settling into the shop windows with a favorite book, becoming living window dressings. Clearly, the bibliophiles of Denver have an intimate, if peculiar, relationship with the Tattered Cover. "Over the years," Meskis muses, "the community has developed a sense of emotional ownership."

For a long time after Denver's economy capsized, it looked like the city would never regain its financial bearings. Lately, however, there have been encouraging signs. Property values quit hemorrhaging a few years ago and recently have actually been rebounding. There has been an influx of small high-tech companies to replace some of the jobs lost to the oil bust. And construction is nearly complete on a $3 billion international airport that will be one of the world's largest. (Gary Sweeney, a witty local artist who pays the bills working as a baggage handler, was awarded a $100,000 commission to create an immense artwork for—where else?—the new airport's baggage claim area.) "Economic growth has been kind of plodding," says John Hickenlooper, a local businessman,

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"but at least it's been consistent, a rising tide that seems to be slowly lifting all the ships."

Hickenlooper, nearsighted and long of limb, is a geologist with a degree in English literature who lost a good job in the oil industry when the economy went to hell. He used his severance pay to launch a successful brew-pub-pool hall-art gallery, the Wynkoop Brewing Company, which must be one of the few bars in existence with an art curator on staff.

The Wynkoop is in a part of the city known as Lower Downtown, LoDo for short–a tolerant, appealingly seedy neighborhood of turn-of-the-century brick warehouses. Thanks to this abundance of cheap, roomy studio space, LoDo has long been home to a community of musicians, painters, sculptors and art dealers–although rising rents of late (the Colorado Rockies, Denver's bumbling but popular new baseball team, are building a fancy stadium just up the street from the Wynkoop, attracting upscale businesses to LoDo) have forced two galleries to close and driven many of the artists across the South Platte River in search of cheaper digs.

The work of these local artists resists easy definition. There has never been a characteristic Colorado "look" or school of painting; the work of notable contemporary Colorado painters ranges from the brooding oils of Karen Breunig to the whimsical mountain landscapes of Tracy Felix to the hypnotic Klee-like doodling of Edward Marecak. Far from the national limelight, in a region with relatively few serious collectors of challenging contemporary art, Colorado artists have always had to struggle. "When it comes to 'hard' art," laments influential LoDo art dealer Robin Rule, "not many people here understand it, and even fewer buy it."

The Denver Art Museum's relationship with local artists is very good–or awful–depending on who is talking: those artists who are represented in the museum's collection have positive things to say about the museum's willingness to support the Colorado scene; those who aren't, don't. Unbiased observers, Rule among them, generally applaud what the museum has done with local talent, including "Colorado 1990," a juried show mounted three years ago that exhibited the work of 67 regional artists.

Moreover, several townies are currently represented in the most talked-about of the museum's centennial exhibitions, where their works hang alongside those of such international luminaries as Lucas Samaras, Richard Diebenkorn, Jim Dine and William Wegman. The show had its genesis when Dianne Vanderlip, curator of modern and contemporary art, decided to mail a single sheet of paper to each of 550 artists and ask them to inscribe it with a birthday greeting to the museum. "I was completely flabbergasted by the response," she says. "I expected to get back maybe 20 unadorned 'Happy Birthdays' from artists who have become my friends, maybe another 20 from people who will do anything to hang in a museum. Instead we've received more than 450 greetings so far, and many are amazing works of art."

Some Navajo weavers responded to the request, even though they speak no English and had to have Vander-

In the Denver Art Museum's state-of-the-art storage area, an orator's stool from New Guinea awaits exhibit.

lip's letter translated. Jacob Lawrence sent an enchanting drawing of workmen carrying tools and bearing good wishes. Jenny Holzer created a wooden card that read, "Happy Birthday! You are guileless in your dreams," and Claes Oldenburg transformed a photograph of one of the museum's distinctive windows into a birthday candle. More than a few artists phoned Vanderlip to confess that they'd "ruined" their sheet of paper, then sheepishly wondered if she'd send them another.

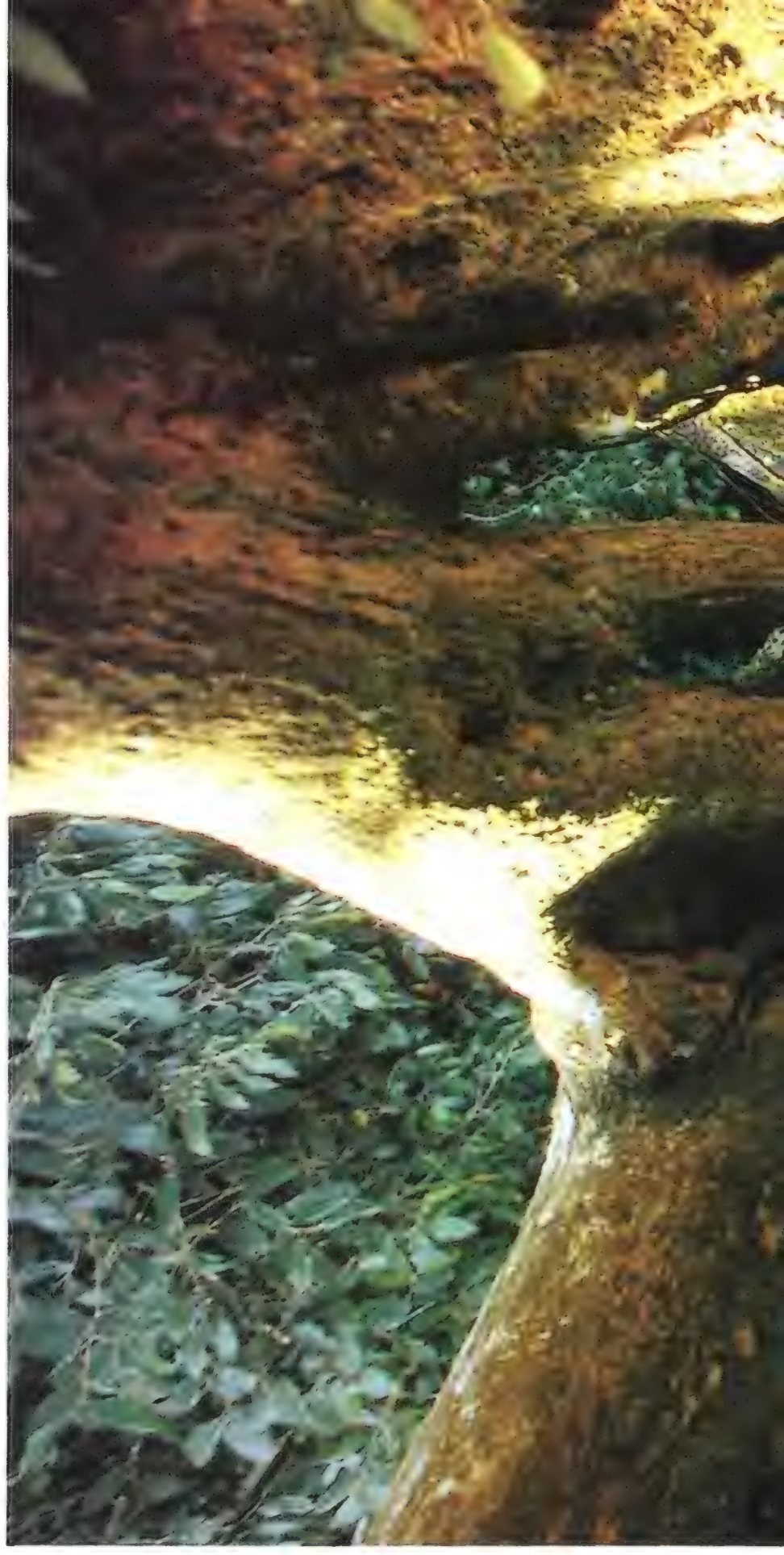
The power and diversity of the greetings take viewers by complete surprise, and provide an unusual glimpse into the workings of the artistic mind. Artists responded with woodblocks, lithographs, photographs, fabric, wax, pastels, crayon, charcoal, miniature sculptures and all manner of paint. When Vanderlip declares, "These are some of the best works I've ever seen," she means it.

"Well," beams Lewis Sharp, proud as a new father over the crop of small masterpieces his museum has inspired, "I guess that's what happens with artists. You hand them a blank sheet of paper, and they just can't leave it alone."

Article and photographs by Mark Moffett

These plants scratch, claw and strangle their way to the top

Tropical climbers will do almost anything to reach the canopy and life-giving light; some even start at the top and grow down



Research assistants climb the cylindrical jungle gym that is a mature strangler fig tree in Costa Rica.

Upon first entering the rain forest in Borneo, I was surprised that the palms I'd seen overrunning the trees had long, inch-wide stems instead of stout trunks. These rose in messy spirals, held to tree trunks by straplike extensions that tore my arms and legs with spines as nasty as sharks' teeth. Walking off the beaten path, I blundered into a maze of coils that resembled the barricade of barbed wire around a prison. Bloodied, I sank knee-deep into mud. Above, I could see how the palms' stems looped out of view into the canopy, spines racheting against tree limbs along the way. Eventually, I pulled one aside and made my escape.

Picking at my rice beneath a dripping lean-to later that day, I learned from the forest guards that these climbing plants were rattan palms, valued for furniture. Rattans use their spines primarily to claw their way into the canopy and secondarily to keep biologists and other large vertebrates at bay. Perhaps my scars from this encounter diminished any esthetic appreciation I could have been nurturing for climbing plants.

Years afterward, while downing beef stew in the more refined atmosphere of the cafeteria on Panama's Barro Colorado Island, part of the Smithsonian Tropical Research Institute, I voiced my opinion of climbers in front of several resident biologists. This raised the hackles of botanist Darlyne Murawski, who proposed to set me straight. In the course of rambles on the island, Darlyne introduced me to climbers at every turn.

This six-square-mile island harbors 175 species of climbers. What surprised me most was their visual diversity. Though their species are fewer, climbers belong to twice as many families of flowering plants as do epiphytes (plants that usually root in trees instead of the ground, such as bromeliads and some orchids). Darlyne pointed out species new to me: climbing ferns, climbing bamboos, climbing gymnosperms (relatives of the conifers). For their assault on the canopy mountain they come equipped with whips, claws, hooks, glues, Velcro-like bristles, pitchforks, suckers, corkscrews–seemingly

Host tree around which the strangler grew has long since died and decomposed, leaving only its shape.

in every combination. Structure varies as well. Many of the bigger climbers were plaited like rope.

My favorites were flat ones that looked like ribbons. In South America I had come across such "monkey ladders," a foot wide by a half-inch thick, with elegant, undulating surfaces. Where a loop of one hung near the ground, Darlyne and I could not resist taking turns sitting in it and kicking our feet to swing like children.

Both delicate and robust climbers abounded. One specimen, a member of the pea family with a cylindrical bole two feet in diameter, was Jack's beanstalk come true. Initially shooting to the heavens like a tree trunk, it subdivided again and again to create a viny cosmos, swathing 64 canopy trees spread across an acre with leaflets so fine it was hard to believe they belonged to such a large organism. This plant, the research subject of Francis (Jack) Putz at the University of Florida, may be the most enormous climber ever studied.

Plants that claw their way to the top

Vine tendril reaches out and touches nearby stem (top). Two days later (above) tendril has a firm grip.

These titans sprout more foliage than any single tree. Jack calculates that a climber three inches in diameter may have as many leaves as a tree with a trunk two feet across. The difference is that the climber, freed from supporting its own weight, can direct more of its resources into dominating the canopy.

With their ground connections, climbers can withstand conditions that would be too dry for many epiphytes. But transporting water and nutrients over long distances requires special anatomy. The vascular channels of most plants are undetectable with the naked eye, but in climbers they are wide enough to be seen as pores when the plant is cut. Large quantities of liquid pass through with ease. In temperate climates such wide vessels would be detrimental; freezing can introduce air into them, and air–by blocking nutrient and water flow–can be as deadly as nitrogen bubbles in the capillaries of a careless diver. This may explain the scarcity, except for some ivy species, of long-lived woody climbers, called lianas, in the temperate zones. Short-lived herbaceous climbers, called vines, are common in the understories of both temperate and tropical regions.

Almost any part of a plant can be modified into a contrivance for scaling the heights. "Darwin wrote a book on this subject," Darlyne reminded me, clinching the issue of the importance of climbing plants. Some species use tendrils–projections evolved from leaves or branches. Tendrils sprout at intervals along the stem and curl around anything they touch. Moreover, tendrils of some plants explore preferentially in the direction of nearby objects, apparently sensing them from afar.

Other climbers, called twiners, wind their entire length around a support plant; the tip revolves as it grows. Still others use modified roots or twigs to adhere to the trunk or grip cracks in the bark. Finally, those known as scramblers simply grapple their way upward through foliage without clinging tightly to any part of it.

Each strategy is ideal for particular circumstances. Tendrils work best with slim supports. Twiners, perfect for supports of moderate diameter, fall into a heap if they attempt too wide a limb. At the other extreme, adhering roots succeed with trunks too bulky to be held any other way but fail with slim vegetation.

Lianas start life indistinguishable from seedling trees. These young grew everywhere Darlyne and I looked. Wherever *Doliocarpus* juveniles were exposed to sunbeams in small canopy gaps, the young climbers were transformed, thrusting upward and acquiring a long terminal shoot. "Unless a young vine finds something to lasso, it eventually collapses under its own weight," Darlyne said. Fallen individuals continue to send up shoots, one after another, in search of that crucial first toehold toward the canopy.

"Tendril-bearers and scramblers need frequent stepping-stones to continue skyward," Darlyne said. Twigs and branches of other plants are stepping-stones. Most climbers cannot bridge a space of more than one to five feet between these support rungs. The first steps upward

Thick, ropelike stems of an adult liana girdle a tree trunk. Smaller climbers compete for space.

can be difficult in the relatively open understory of an undisturbed forest. By contrast, any place with a thick understory (a riverine or hurricane-prone forest or a major treefall gap) provides support every step of the way. Such "jungles" are enveloped in a riot of vines at ground level.

Pristine tropical forests may be as laden with climbers as any of these heavily disturbed places: their greenery is just not visible from the ground, having grown over the top of the canopy. In New World rain forest (where most research is based), about half the canopy trees have lianas. These either reached the canopy long ago, during periods of forest disturbance, or ascended tree boles or other lianas. When a liana arrives at a tree's summit, it extends toward the heavens before falling back to the canopy surface. Continuing in this clumsy fashion, it grows horizontally across the crown. In many cases the plant expands over swaths of canopy by repeated dividing.

Eventually the liana comes to the crown edge. To bridge a gap between trees, a terminal shoot arches up, then leans over to the next crown. This is accomplished through trial and error, so that shoots may sprout at different angles before one succeeds. The initial connection is hard to maintain. Crowns often throw off tendrils while swaying in the wind; gaps wider than a couple of yards cannot be bridged at all. While trying to cross an abyss, all or part of a liana may plummet over the edge of the crown. The plant can still succeed in an assault on the adjacent tree, but now it does it the hard way: starting from below, it finds and climbs a suitable trunk.

Growing slowly in girth, lianas may outlive many of the trees that support them. They are built to survive smashing and twisting, and they seem potentially immortal. Yet forest upheavals leave permanent marks on lianas. Climbers spiraling in empty air, odd shifts in direction or distortions of form—all suggest the ghosts of trees past. A liana draped partway to earth between crowns, for example, tells us that a tree bearing it aloft once stood at the intermediate spot.

Climbers drive some of this history themselves. Lianas are a burden to trees, spreading over and shading them. They slow growth and even snap the saplings they use as stepping stones. Trees improve their chances of surviving if they can grow faster than the climbers on them. Jack Putz has found that trees with large leaves, shedding bark and swaying trunks often dislodge pesky climbers. And fewer climbers may be able to bridge trees that sway out of sync, he notes. Perhaps the varied architectures of tropical trees result in different rocking patterns. It is Jack's conjecture that the tactics of lianas may promote local tree diversity.

Drooping languidly over trees, lianas appear to have little of the vigor needed to reach the canopy. Some early observers had assumed that lianas were carried up like hitchhikers on a growing tree. "Absolutely not," Darlyne insisted. Because plants lengthen only at their tips, any points along a trunk forever remain the same distance apart; growth there occurs only in girth. A liana has to do all the climbing by itself.

Not all vinelike plants start at the bottom and work up. Cristián Samper, an ecologist, researches a group of such plants called hemiepiphytes (plants that are epiphytes for part of their lives) in Colombia's La Planada Reserve. La Planada lies in the greatest expanse of cloud forest on Earth, a vast breeding ground for new plant species. In disturbed forest around the living quarters in the reserve, epiphytes that anywhere else would be hidden in treetops adorn branches at eye level with garlands of flowers. In deep forest, plants form herbaceous coats a yard thick on trunks and hang like draperies from branches.

We stopped to look at the roots of a clusia, the

The author is a tropical ecologist. This article is adapted from his book The High Frontier, *to be published next year by Harvard University Press.*

Botanist Darlyne Murawski untangles monkey ladder vine in Panama's Soberania National Park. More than 175 climbing species grow on nearby Barro Colorado Island, part of Smithsonian tropical research station.

hemiepiphyte Cristián was studying. A half-inch or so wide, the roots stretched straight from the canopy to the ground. They felt as taut as strings on a supersized banjo. I plucked one and watched it oscillate in waves up to the canopy, where I spied, at last, its big rubbery leaves.

By definition, a hemiepiphyte switches survival strategy over its lifetime. Living first as a canopy epiphyte, a juvenile clusia may grow just two leaves a year. In a few years it will have accumulated sufficient reserves to abruptly grow a root to earth. No longer impeded by the canopy's unpredictable water supply, the plant can now reach a huge size by sending down more roots. Eventually it may dominate much of the crown space of the host.

Clusia seeds sprout so swiftly that you can virtually watch the seedling unfold, Cristián told me. "They are not choosy about where they germinate. But for some reason a seedling requires a branch surface to root properly. A dead branch on the ground will do. Maybe the plant will grow a little faster in bright canopy light, but the point is, unless it's on a branch, it will die."

To survive long, a clusia must germinate not only in the safety of the canopy but about halfway out along an intermediate-sized branch. "That's different from figs, some of which are also hemiepiphytes," Cristián continued. "Figs survive most often at the crotch of a branch."

The most fantastic hemiepiphyte strategy, used by some clusias and many figs, is that of the stranglers. Starting as an epiphyte, a strangler extends its roots down the trunk of the support tree, plastered against the bark. Whereas the roots of other plants remain simple conduits to the earth, in the extreme forms of stranglers the roots coalesce until they form a cramped basket around the tree trunk. Then, as the tree attempts to grow, they crush it to death.

This description is too colorful for some biologists, who downplay such notions of tree strangulation. They insist trees die by the overshadowing of dense hemiepiphyte foliage or by losing the competition with the roots of the fig for nutrients and water. I find it odd that this vegetable version of Tennyson's "nature, red in tooth and claw" has been watered down. Undoubtedly, the roots of a strangler fig impede expansion of the tree. Inside their viselike grip, the trunk bulges from each opening in its woody cage. Such expansion is absolutely necessary for the tree's survival. In the trunk, new vessels must periodically replace dying ones. If rings of vessels cannot be added by increasing trunk girth, nutrients and water cease to flow as surely as blood flow stops when a tourniquet is applied to a human limb. Jack Putz agrees with me. "That's why strangler figs seldom kill palms," he says. "Palms don't need to grow in diameter to replenish their vessels."

There's no dispute about what happens after a strangler kills its host. The tree corpse, cradled aloft in the

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arms of its slayer, rots and falls away, making compost for its replacement. And replacement it is: what was once an innocuous canopy plant now stands on its own as a tree, albeit a curious one. Its trunk persists as a woody cylinder, hollow down the middle where its predecessor once stood (pp. 110-11). Continuing to grow to an enormous height, the trunk retains countless nooks and crannies, left over from the fusion of scores of roots. These form wondrous hideaways for epiphytes and canopy creatures.

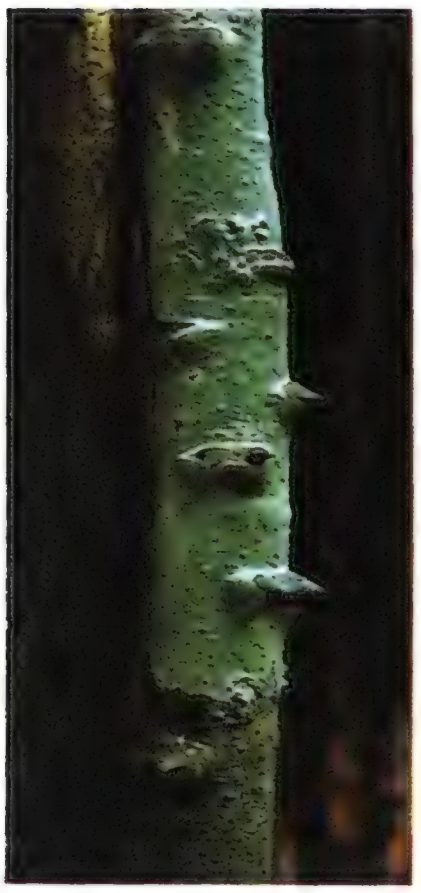
Another class of hemiepiphytes turns the life history of the species discussed thus far on its head. Unlike primary hemiepiphytes such as clusias that begin life as epiphytes perched in trees, these start at ground level as vines and often work their way up to becoming epiphytes, severing their connection with the ground. We call them secondary hemiepiphytes. They are the most remarkable, however, for the way they move across the forest floor and, later, the canopy, looking and acting much like snakes in search of a place to bask.

These plants belong to groups within the arum family that we regard as mundane: houseplants such as philodendrons and monsteras imported from the American tropics. But Thomas S. Ray of the University of Delaware discovered how unmundane they are while a Harvard graduate student working in Costa Rica (SMITHSONIAN, March 1979). As their stem grows in one direction, putting out both leaves and roots on each new segment, the trailing section dies. The living stem appears to "move" through the forest. No part of the vine actually moves, but to an observer the effect is the same.

The plant is unusual not only for how it moves but for the direction in which it moves. Unlike seedlings of almost every other plant, those of the monstera head not for the light but for the nearest dark object. This usually leads them to a tree trunk. Once there, they shift to the conventional strategy of growth toward light, and so they climb.

Once it has found its place in the sun, a monstera's foliage changes radically. In the dark understory the heart-shaped leaves are a couple of inches wide and lie flat against the bark. Where the sun shines on the plant, the leaves grow to "monstrous" size: as long as six feet, with deep lobes. Eventually the vine's terrestrial roots become superfluous, and its stem dies at the base of the tree. What was once a terrestrial seedling has become an epiphyte. Such plants enjoy unusually flexible lives. Most epiphytes die if they fall from a tree. If a whole monstera takes the plunge, it simply heads for a nearby trunk and starts up again.

These "green snakes" have often baffled me. On the one hand, epiphytes live at the brink of death from dehydration or lack of nutrients, the price they pay, it appears, for not being rooted to bountiful Mother Earth. On the other, we find secondary hemiepiphytes that cast off their earthly connections at the earliest convenience as so much excess baggage. But it is becoming increasingly clear that secondary hemiepiphytes are more flexible than they have usually been made out to be: at times of water stress, they have the option (unlike epi-



Climbing tactics vary. From the left: this scrambler species uses spikes for traction; philodendrons rely on lateral roots; a cat-claw vine forms three-pronged hooks to gain a toehold in the bark of a host tree.

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phytes) of dropping new roots to the ground. Indeed, because such roots, being small and plastered to tree bark, are next to impossible to trace to the ground, it may be that many secondary hemiepiphytes have them most of the time. Such plants would behave more like vagabond lianas than epiphytes.

The rain forest tapestry changes constantly. As humans we are oblivious to the movement of plants. One thing I've learned is that there is art in plant motion. We may appreciate the grace of animals as individuals (the whir of a hummingbird, the leap of a monkey, the scramble of a beetle), but viewed in reference to the forest, animals move as simple projectiles–dots in a greater framework of vegetation.

Plant dynamics are another matter. Rooted in place, plants give us a dance of interwoven forms that begins just at the limit of our perception of time and proceeds across human generations. There are a few curiosities–sensitive plants or carnivorous forms capable of swift but simple action–but these contribute little to the canopy superstructure. Straining hard, we barely make out the rotation of a climber's terminal shoot, its speed hardly matching the crawl of a clock's minute hand. But accelerate time a hundredfold, so that about two hours pass in an interval we experience as one minute. Then most animals will progress in jerky blurs, scarcely identifiable; even lethargic snails will sprint. Plants now inspire our awe. The climbing shoot that we had watched before now spirals, like the yardlong feeler of some monster in a horror film. All around us these shoots rise pugnaciously, groping like blind predators would for their quarry. On other plants, tendrils encircle trellises in graceful arcs, like monkeys coiling prehensile tails; clusia roots glide slowly downward.

On an unusually bright day in Colombia's La Planada cloud forest reserve, ecologist Cristián Samper checks growing root of a clusia, a hemiepiphyte. Like an epiphyte, it germinated on high, 120 feet up a tree.

Now we speed up time once more by a hundredfold. About one week will pass during the single minute of our observations. Animals shimmer in the air, barely registering on our senses; one night's sleep takes a couple of our seconds. Plants have gone wild. Leaves pop open; most flowers unfold and die as a mere flash of color. Climbers move in a combative frenzy, tendrils and twining shoots spinning in a blur; plant tips seem to flow doggedly upward, often piling one atop another in a life-or-death race to the light.

Now, again, another temporal acceleration. About two years pass during our minute. Sapling vines and trees appear as crowds of writhing vermin that continuously die and decay, but for a lucky few. Branches of the mature trees overhead thrust outward. Lagging close behind, epiphytes burst forth. Monsteras slither among them uncannily like green serpents, transforming light into motion with absolute silence. In a minute we may be able to detect the ever-tightening grip of a strangler around its victim.

In our next time jump, the strangler grows its clasping tentacles like, well, like nothing that exists in our time frame, but our minds conjure a horrific meshwork of contracting muscle. Trees ramify tumultuously, seizing canopy space in an exuberant dance. All around us during our minute of observations (that is, in two centuries of actual time), collapsing trees tear holes in the canopy that pioneer trees swiftly invade. This dance we can now see is ecology in action.

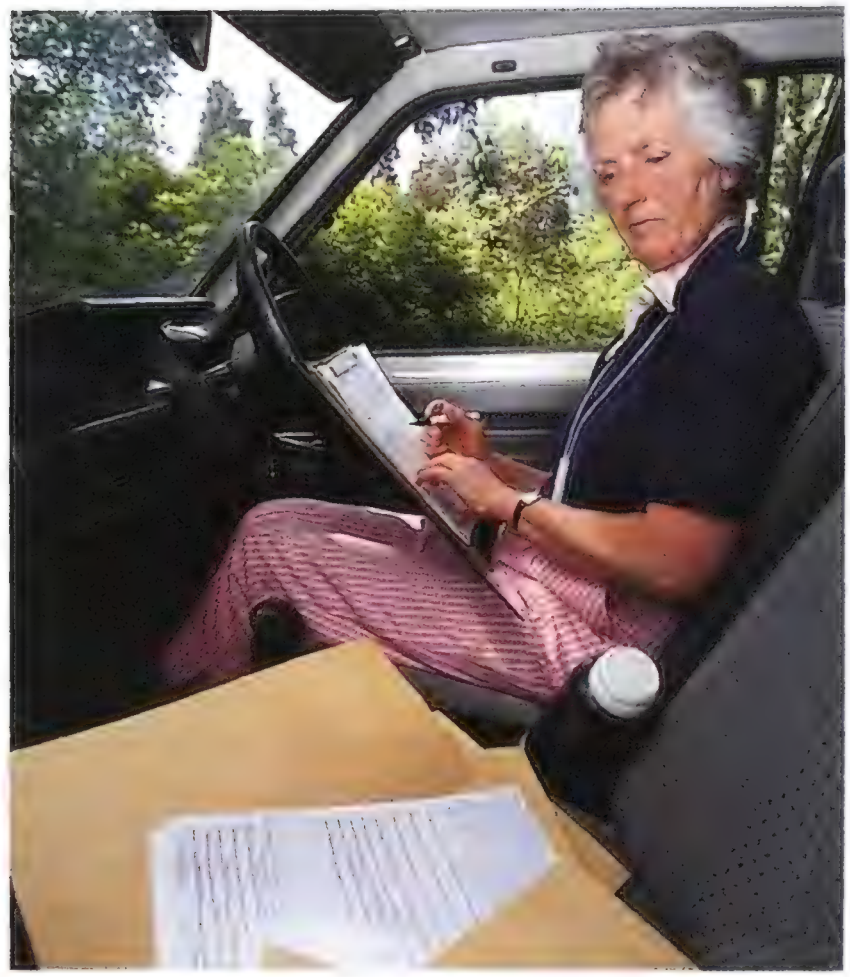
Any further jumps in our perception of time and everything but the geological vista will be blurred. Unable to distinguish even the most enduring organisms, we will have left behind the realm of individuals and entered the domain of biological evolution.

Eventually, it will be grounded by massive roots like those of the mature clusia that frame Samper (below, center). Some climbing plants begin life on the ground, then sever their roots when they reach the canopy.

By Michael Olmert

In seven-league gum boots, she guards the past

If you have a bit of Roman wall in your bathroom or Neolithic mounds in the yard, Helen Paterson will be on your case



Before starting her East Anglia rounds, field warden Paterson checks a list of historic sites to be visited.

"Can I see your Roman wall?"

"My what?"

"Roman wall. In your downstairs loo."

"If you say so. Be my guest."

Welcome to the world of the "field monument warden." The place: the English town of Colchester in Essex, once a fortified Roman settlement with massive walls, long sections of which still survive. Trouble is, 1,900 years of accumulating rubbish have buried the Roman remains about 20 feet below the modern street. So down we plunge, into the dank basement of a Colchester shoe store. And there it is, rough Roman masonry, just where it ought to be, serving as the wall of a bathroom.

"This shop backs up against a brick-and-rubble-stone Roman wall." The speaker is Helen Paterson, archaeologist and field monument warden for the quasi-governmental agency English Heritage. "Today, the wall's hard to spot. Inside the town it's all underground. But from the back of this building, in the carport outside town, you can clearly see it."

Paterson's job is to pull on her gum boots every day and go forth to monitor 750 historically important sites spread over five counties of East Anglia. Her task, however, is fundamentally different from an American park ranger's: the monuments she monitors are in private hands, not owned by the government and mostly not open to the public.

The owners of the shoe shop didn't know the rough wall in their loo was a Roman remain; Paterson has to check on it every few years to be sure that people—especially new owners and renters—don't erase the past by punching plumbing holes through it. "It's their building," she explains, "but the historic bit is legally protected. Actually, these owners were excited to find out; they take visitors down there all the time now. Pride of place."

That's the daunting thing about history and archaeology in Britain. Practically every square inch has some historic interest, and relics of the past litter the landscape. England is a cultural layer cake that clearly displays—from top to bottom—modern, medieval, Viking, Saxon, Roman, Iron Age, Bronze Age and even Stone Age remains. Every new roadway turns up important artifacts, delaying completion until archaeologists can evaluate the site. A four-mile section of the M40 motorway outside of Oxford turned up 28 sites. Under the A1(M) near Welwyn, a Roman bath is preserved in a steel cage. "If we were to rigidly preserve it all," says Paterson, "the entire economy would grind to a halt."

Most Americans know English Heritage (a simplified name for the Historic Buildings and Monuments Commission for England) as the agency that operates such historic attractions as the Tower of London, Stonehenge and parts of Hadrian's Wall. But EH also has a London laboratory and a staff of scientists who undertake archaeological digs and advise the government on preserva-

One of many relics needing care is an octagon-towered house built about 1620 by the powerful Cecil family.

Photographs by Adam Woolfitt/ Susan Griggs Agency

tion. Equally important is the agency's watchdogging of privately owned monuments. At the moment, EH keeps an eye on some 13,500 sites, which are visited by a tiny staff of 22 Helen Patersons. In the next ten years, the number of sites is expected to climb to 50,000.

Paterson's historic charges are a wild lot: windmills and lighthouses, chapels and bridges, forts and castles, deserted medieval villages, parts of three cathedrals, a steam-powered water-pumping station, medieval strip-farming fields with their distinctive ridge-and-furrow indentations, a gatehouse over a moat, Victorian water conduits, Roman roads and villas, Saxon defensive earthworks called dykes–some of them miles long–that march straight across the landscape. So every day she grabs her clipboard and files, and sets out in her rattly old Renault. Uniform of the day usually consists of jeans, an aged navy blue Guernsey sweater, and a pair of ancient black Wellies. Says she of the black boots: "I detest those pseudo green ones, affected by every city stockbroker and his lady wife who've bought a trendy second home in the country."

First stop on this day is a remodeled manor house on the site of a former priory with a moat and 16th-century tithe barn. "Bits of the old church were incorporated into the manor house when the monks were forced out by Henry VIII after 1537," Paterson says. "Lately there have been reports a new owner has been making improvements without permission." As Paterson parks the car in the farmyard, the owner (let's call him Mr. Faith) steps outside. Defensive, not to say pugnacious, is his mood. "Mr. Faith, Helen Paterson, English Heritage," she says and extends a forthright hand. "Looks like a smashing job you've done in restoring the tithe barn."

And she is right. Mr. Faith has completely redone the roof, reclaiming and reusing thousands of original terra-cotta peg tiles, restoring rotten sideboards, bringing to light the mighty architecture of the ceiling with its struts and trusses, arched braces, purlins and collar beams.

Wood-burning stoves in a wooden barn?

Tithe barns were needed by the monastic estates to store the produce they collected from their tenants (10 percent of the crop). The architects of the Middle Ages experimented in wood with the techniques they'd used in stone cathedrals. Few tithe barns are left now in Britain, and Mr. Faith has done a good (and wildly expensive) job of ensuring that his 400-year-old building will survive another century or so. Helen compliments him but goes on to float the suggestion that perhaps the best way to protect a wooden structure is not to heat it with two wood-burning stoves.

"You people, you just don't get it, do you?" a red-faced Mr. Faith comes back. "The only way I could justify improving the barn was so that I could hire it out for weddings and parties. Now you're telling me I can't heat it?"

"Not at all, it's just this wasn't the way to do it," the field monument warden replies. "An archaeologist ought to have been here to watch as you dug the plumbing trenches into the building, or as you moved dirt for the modern floor. Permission is required by law for this sort of change. It's even possible we could have suggested a less, um, inflammatory heating plant."

The three of us move out of the tithe barn and into the now dry moats that once surrounded the priory. Mr. Faith's little dog sniffs his way along the banks and among the twisty trunks of an abandoned boxwood orchard that was probably planted by the Augustinian monks to give their establishment a Mediterranean flavor. The historical record says they walked this very land in 1216. Birdlike, Mr. Faith hovers over a scale plan that Paterson holds on her clipboard, showing just which areas of his yard are historically protected. He's done such a good job of clearing and maintaining his fields that Paterson thinks she sees the lumpy remains of a

Children gleefully churn around grassy contours of an 18th-century turf maze in the village of Hilton.

Michael Olmert, author of The Book of Books *(Smithsonian Press, 1992), teaches courses in Shakespeare at the University of Maryland.*

It is one of some 700 vulnerable sites, structures and ancient remains that Paterson tries to protect.

more extensive medieval settlement. She wonders if the protected area ought to be enlarged.

Mr. Faith turns blue. Later, Paterson tells me that the priory is one of the first places she visited when she was appointed warden in 1979. "I was one of the first wardens. In my naiveté, I noted that since the moat and the earthworks seemed to extend well beyond the officially protected area, the EH map ought to be redrawn. Now it has been, and Mr. Faith is unhappy."

He will be unhappier still. Inside the old historic boundaries, near the manor house where the nave of the old priory church once stood, is a gaping hole in the ground. "We removed a dead apple tree," Faith explains. The hole appears innocent enough. But using her pocket trowel, Paterson digs out bits of tile and mortar—cobbling from an old yard or perhaps part of the nave foundation. Much of the dirt and presumably a great many sherds and artifacts have been carted off to oblivion along with the stump.

Patiently, she explains the nature of this sort of archaeological protection, known as a "watching brief." "A few years ago, a parish council in Cambridge was installing a fence on an earthworks site. We gave permission, saying we'd send someone. But they went ahead and dug first. When they found a Paleolithic stone axhead, they rightly submitted it to us but said they couldn't remember which hole it came out of. Since there were dozens of postholes, vital information was lost."

Back inside the Renault, Paterson confides that she'll have to watch Mr. Faith closely. "He's impatient with planning and permission. But maybe I can help by explaining to him the historical importance of the site. After all, it is his property; he ought to be able to improve it—so long as he doesn't destroy the past. It's hard for people to read the landscape, and often they just don't know what they own. When I tell them, they say, 'You're joking.' "

"I had to return with a policeman"

In time, however, Mr. Faith demonstrated his infidelity. Within days of our visit, he rented a huge earthmover and dug holes to plant more trees, scraped a yard of earth from his dry moats and dug foundations for a new farm building. In Paterson's view, he'd richly earned a date in Crown Court. "You have to be careful," she says. "You can't let your face go pink or speak sternly to the owners. I've been chased off properties before, once so violently that I had to return with a policeman. But that's very rare."

For Paterson, each day is a delicate balancing act to weigh the needs of the present with the rights of the future. Passionate compromises must be made. Farmers have to make a profit. If the sites of villas or burial mounds have to be taken out of agricultural production, the government can offer grants to defray the farmers' lost income.

She constantly meets with farmers, owners and land agents, giving advice and discussing what might be done on their property, and then is persistent in seeing that the work is done properly. Most of them become her friends. Others, of course, have reservations. They fear that if they cooperate, hordes of tourists will flock around in her wake, trooping over their backyards. (Not true: visitors to monuments in private hands must have prior permission from the landowner.)

Unfortunately, the tensions are not just between Paterson and owners and developers. When a windstorm collapsed a 25-yard section of a medieval brick wall, the owner had no money to rebuild it, even though the rubble posed a hazard to grazing horses. But when a neighbor offered to help out by buying and removing the valuable old bricks, the EH legal department delayed the sale on the grounds that the wall was a protected ancient monument. The final decision declared that "while the wall is included in the protected area, the bricks which have fallen in the neighboring field are no longer so protected." "Madness," says Paterson. "We're lucky the storm spared the walls around the Tower of London."

Barrows—the great burial mounds generally filled with artifacts from Neolithic times—are in constant danger from farmers and treasure hunters. These are part of a cluster of 11 in Therfield, Hertfordshire.

After leaving Mr. Faith, Paterson is whizzing toward the tiny village of Pirton, Hertfordshire. Suddenly she mashes down on the accelerator. "Sorry, but I just had to get round that estate van. I mean, look at him dawdling along!"

Once safely in Pirton, Paterson and I stand atop the great mound of earth called Toot Hill. The grassy promontory here is a motte, a man-made defensive hill atop which a castle once stood. The hill, its castle with earthen ramparts that enclosed a bailey (in this case, the space between castle and ramparts), as well as the castle's encircling moat were built by the Normans to control the vast land they occupied after they conquered England in 1066. The Normans created hundreds of motte-and-bailey structures in England, and most of them are just as incongruous as this one, poking up out of the village green—a hill without a castle, a motte without a bailey. They serve as reminders of a violent past when William the Conqueror and a handful of knights took over the whole country, giving most of it to their own people, hanging Saxons left and right, but bringing a kind of order to a place that had long been fragmented among Angles, Saxons and Norsemen.

Atop Toot Hill, you're eye-to-eye with the 16th-century church steeple next door. Look east into the morning light: grazing fields betray the telltale humps of medieval plowing and the deeper ruts of defensive moats and fish ponds that surrounded a medieval village, its manor house, barns and gardens. Horses and sheep now crop the grasses over what was once a heavily defended and productive agricultural settlement.

This sort of landscape feature is a "moated site," and there are so many of them in England that some historians have suggested they were built in a medieval frenzy of "keeping up with the Joneses." Adds Paterson: "Most of them date from the King Stephen and Queen Matilda Wars—a quarrel that brought Henry II to the crown in 1154—but there are so many of them it seems that, even when peace returned, every country bumpkin wanted a moat round his manor. They'd become fashionable, not needed for defense at all."

On the high land above Pirton, the near ridges bristle with prehistoric burial mounds called barrows, or tumuli. And just ten miles away, there are Iron Age hill-forts, flat-topped hills ringed with earthwork fortifications 2,500 years old.

Julius Caesar and his legions passed this way in 54 B.C. He commented on the impregnability of the nearby Ravensburgh hill-fort, with its steep 500-foot ramparts. The site was then occupied and refortified by some

tough Belgae called the Catuvellauni. Today, Ravensburgh is owned by a Hertfordshire farmer and monitored by Paterson. EH is helping defray the costs of dealing with a legion of rabbits that are burrowing into the historic ramparts.

Back during World War I, it was discovered that a pilot could easily see the delicate outlines of vanished buildings, marks that are almost invisible on the ground. One day, we walk across acre after muddy acre near Cambridge to check a Roman site lately identified by aerial photography. Each step is dogged by pounds of boot-clinging mud.

"There's so much Roman pottery hereabouts, it wears you out," says Paterson.

Almost at once I spot a sherd of smooth terra-cotta, gleaming through the muck. "Samian ware," says Paterson briskly. "Elegant material, glossy and often embossed—the good stuff Romans brought out for guests. Made in Gaul between the first and third centuries A.D., and exported across the English Channel. Shows a very sophisticated culture; the people in these villas were hardly pioneers." She is acutely interested whenever a farmer's plow turns up tesserae, little mosaic tiles. In such cases, trial excavation trenches may help to determine if a full-scale dig should follow.

As an archaeologist, Paterson has worked on major digs of medieval monastic life in the cathedral town of St. Albans. She has supervised the finds from a Saxon cemetery in Cambridge and at prehistoric fishing and camping sites in Yorkshire. But as a field warden, she has a variety of adversaries—in addition to developers and roadbuilders, there's the occasional farmer who tries to eke out a few more bushels of wheat by plowing over and sowing seeds on a prehistoric burial mound. This happened constantly over the past few centuries, with thousands of barrows disappearing under the plow.

"Who knows what's still under there?"

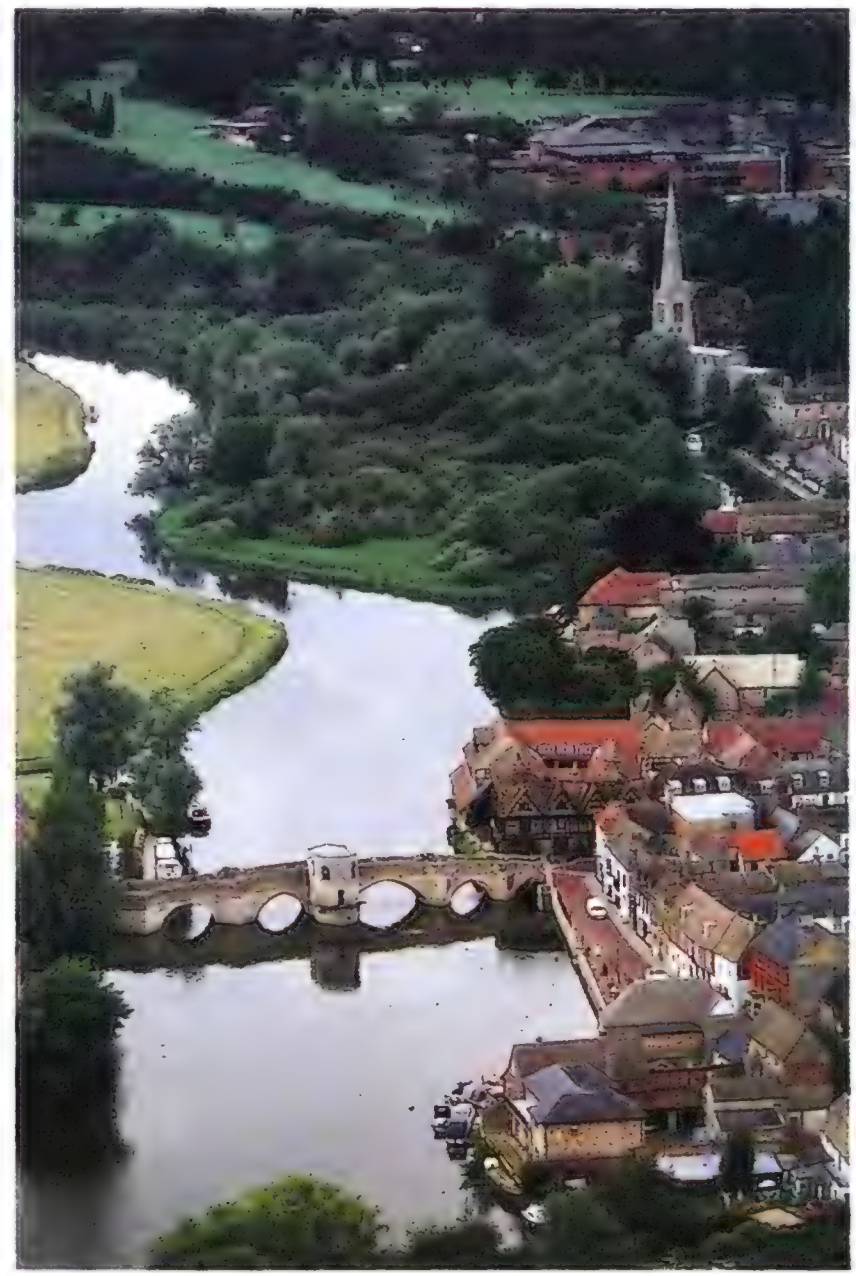
One of Paterson's sites, in a potato field near Royston, a round barrow that used to be more than 3 feet high and 45 feet across has been flattened. It is now a white smear of chalk on the landscape, 90 feet across. "Who knows what's still under there?" she asks. "If this happened today, the farmer who did it would be handed a good stiff fine."

These days the worst barbarians are the vandals who illegally wield metal detectors. Most historical sites operated by the government post signs outlawing the use of them. But there are clubs, gangs really, of metal detector enthusiasts who invade recently plowed fields after dark. "They can predict likely sites by using ordnance maps," Paterson points out. "When they find things, the artifacts are totally unconnected to any context—nearly useless to historians. That is, if the artifacts ever show up at all. When the culprits are caught, they're always prosecuted, but it scarcely stops them."

Once in a while, metal detectors come up big. Last fall, a farmer in a village in Suffolk lost a hammer in an arable field and rented a metal detector to find it. What he found instead was a hoard of gold and silver coins, jewelry and statuary dating from the Romano-British period, worth an estimated $15 million.

"I couldn't believe it when I saw the farmer's picture in the paper," Paterson says. "It showed him standing on the very spot of the find—with a clearly identifiable field monument in the background. Anyone with a map and a pair of eyes can now locate the site and be out there tonight illegally digging.

"I know this is just another of literally thousands of burial tumuli in England—but look, these things were made by prehistoric people. They left no written record. What they did leave were these little hills, which dot the countryside like humorous pillboxes." They're the bottle of a message-in-a-bottle to us, crammed not with writ-



The bridge at St. Ives, with a two-story stone chapel in the center, was originally constructed in 1415.

In Britain, history is always underfoot

ing but with artifacts and bones that seem to proclaim, "We were here too!"

It's my last day. Paterson brings me to her favorite site, whispering as we emerge from the car, "Shhh! You'll spook the birds." She's saved the best for last: a duck decoy, a star-shaped lake designed to lure waterfowl (opposite). In the 17th century there were some 200 duck decoys in England, most of them in the Fenlands, a marshland across the sea from Holland. The word "decoy" itself hints at a Dutch origin. *Eende* meant "ducks," and *kooi* meant "cage." When the English heard *eendekooi*, they possibly figured the first syllable as an indefinite article and dropped it, leaving us with *dekooi*, whose spelling was Englished as "decoy." One of the old ways of hunting with the decoy was to attract wildfowl with tame ducks swimming in an apparently safe lake, so the tame ones became known as "decoy ducks." Later, carved and painted wooden ducks became our modern "decoys."

We walk along a drainage ditch leading to a clump of low woods and a fenced enclosure of 17 acres that encircles a 2.5-acre pond. Decoyman Ivan Newton and his little ginger-haired mongrel, Piper, meet us. "Follow me," he whispers, putting a finger to his lips, "and mind the twigs on the footpath."

At the path's edge, we come to the lookout hut, a small enclosure located behind a series of woven-reed fences. For quiet's sake, the "door" of the hut is hanging burlap. "The birds have to be completely secure here, so no noise and no view of humans," Newton says. Teal and mallard are describing lazy circles on the mirror-quiet water. A pair of wigeon snoozes on the mossy verge. Here we can plainly see the shape of the decoy—a small pond in the center, radiating eight gently narrowing canals, or pipes, each lined and covered with netting hung on great hoops that arch from bank to bank.

We could have had this same view in 1670. From the lookout, Newton spots a few wild teal lazing close to the entrance to one of the pipes. Gingerly, he makes his way toward them. Stage one is to show himself to the ducks by stepping from behind the reed fence and placing himself between them and the open pond. His aim is to startle the ducks into the pipe.

Today the birds simply keep circling. Now for stage two—and some help from Piper. Decoys are traditionally worked by dogs called Piper, but tradition does not stipulate a breed. "It's best to get a dog that looks like a fox," Newton says. "It's strange; show the dog briefly, and the ducks swim over as if to chase him away. Like crows buzzing a hawk." Behind the screen, Newton signals. Piper hops out between fence sections and runs about 20 feet along the edge of the pipe before disappearing behind the reeds again, his bushy tail waving like a flag before a bull. The ducks perk up and begin following him. "The hardest part of his training," says Newton, "is to make him flee the ducks and never bark at them."

The ducks follow Piper, in no time coming deep under the netting. And now, when Newton shows himself, they have no choice but to swim toward the narrow end of the pipe where they can be easily taken. These days they are banded. But antique decoys like this were once an important part of the market economy of East Anglia, used in the killing of thousands of ducks each year. Paterson, however, sees this as a province of archaeology—the preserving and trying out of the tools and techniques of the English 300 years ago. "There are only a handful left."

Fences to fend off the foxes

Trouble is, preservation is so expensive. This land is owned by a farmer who could scarcely afford to keep up such an artifact. Tall trees interfere with duck flight paths. The shallow pond has to be topped off with irrigation water. Aquatic vegetation must be cut back or the ducks will skulk in the reeds. Fences are needed to keep out rabbits and foxes. Nets and hoops are always coming down under windfalls and snow. "That's why English Heritage has provided a £7,000 [$10,500] grant for its upkeep," she explains. "Even at that price, it's a bargain."

At least 6,000 years of human habitation have molded England's countryside. But much of it has disappeared just since the 1960s, when Britain began to recover fully and rebuild after World War II. When times get better, the natural human instinct is to build, to expand. Powerful pressures still want to do away with any archaeological group that tries to stand against development. This is England, though. There will always be monument wardens, whipping along the hedgerows of East Anglia, seeing things that few tourists ever see, and diplomatically protecting them.

"I hope I haven't terrified you at any point," Helen Paterson quips at the end of a long day. "By my driving, I mean."

One of the few remaining 17th-century duck decoys in England comprises a man-made lake (below) and eight curving "pipes" with woven-rush side screens and arched, netted covers (above). Ducks are lured down the narrow channels to be trapped. Paterson (right) consults with decoyman and caretaker Ivan Newton.

By Jay Feldman

Roberto Clemente went to bat for all Latino ballplayers

His skills on the diamond dazzled the fans; his humanitarian work is now living tribute to the 'Pride of Puerto Rico–and Pittsburgh'

At a 1972 Clemente tribute in Pittsburgh, Roberto jr., then 7, kissed a photograph of his famous father.

When Roberto Clemente, the Pittsburgh Pirates' magnificent right fielder, doubled to left-center field in his final at-bat of the 1972 season, he joined one of the most exclusive clubs in baseball history. At the time, only ten other players had banged out 3,000 career base hits; Clemente claimed his place alongside such legends as Ty Cobb, Stan Musial, Tris Speaker and Honus Wagner. For anyone who followed the game in those days, finding him in such select company was no surprise. He had, after all, won four National League batting titles, been elected to the All-Star team 12 times and received both the National League's Most Valuable Player (MVP) award and the World Series' outstanding player award. Now the only question was whether, at 38, he would decide to play yet another season or retire to his native Puerto Rico, where he could devote himself full-time to developing Sports City, the youth camp he had been dreaming about for years.

Sadly, there would not be another season for Clemente. He was killed on a New Year's Eve mission of mercy, flying relief supplies to earthquake victims in Nicaragua, when his plane went down off the coast of Puerto Rico. Three months later he became the first Latin American player to be voted into the Baseball Hall of Fame in Cooperstown, New York.

Pirate hero assumed the unusual stance at plate–bat held high, leg cocked–that won him four hitting titles.

In 1992 nearly 40,000 fans joined with members of Clemente's family and ex-teammates at Pittsburgh's Three Rivers Stadium for a pre-game ceremony commemorating the 20th anniversary of his final season. Suddenly, there he was again–this time on the towering video screen in center field. *Clemente at bat, feet spread wide, bat held high, reaching across the plate to drive an outside pitch deep into the gap in right-center field; Clemente on the basepaths, running out from under his batting helmet; Clemente racing to catch an outfield fly ball and then rifling a throw to third base that cuts down a runner trying to advance.* Each scene elicited a tremendous roar from the crowd, as if what the fans were seeing was not a highlights film but rather the incomparable No. 21 himself. Clearly, the "Pride of Puerto Rico" was still the pride of Pittsburgh, as well.

Baseball became popular in the Caribbean after the U.S. Marines occupied Puerto Rico and a number of other islands during the Spanish-American War. By the turn of the century it was flourishing throughout much of Latin America. Clemente was not the first major-leaguer from that part of the world. He'd been preceded by a handful of others, including his own countrymen Rubén Gómez and Vic Power, Cubans Dolph Luque and Minnie Miñoso, Venezuela's Chico Carrasquel, and Bobby Avila of Mexico. But Clemente was the first Latino superstar, and as such he was a hero not only in this country but throughout the hemisphere.

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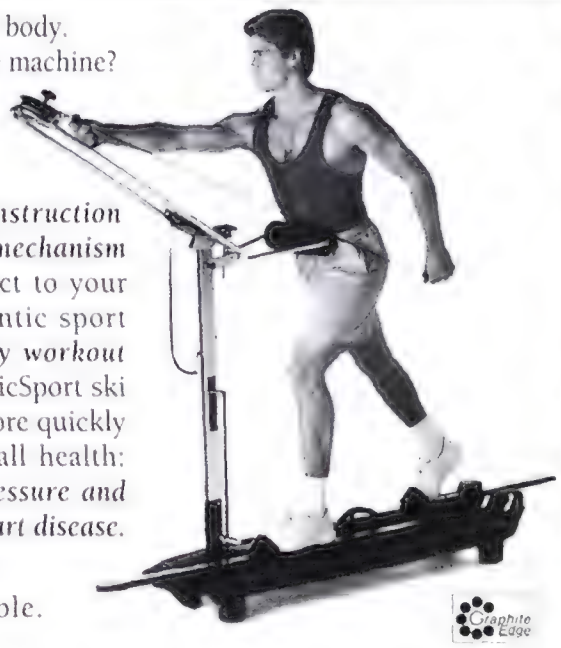

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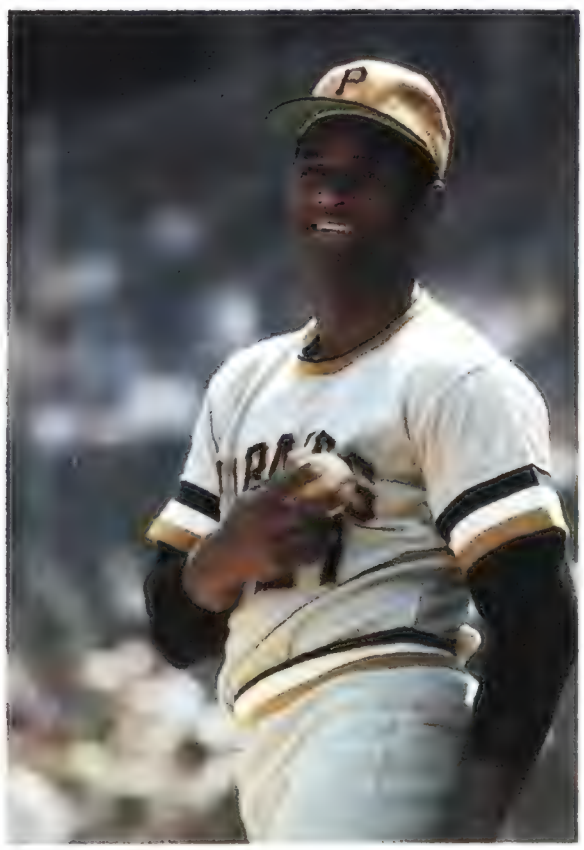

Always an intense competitor, Clemente enjoyed lighter moments on field, too.

"He was a leader for all Latinos," recalls Luis Aparicio, who broke into the majors a year after Clemente. "He was always an advocate for our rights."

Roberto Walker Clemente was an enormously complex, passionate man whose interests spanned many fields. He wrote poetry. He worked in ceramics and played the organ. He was a friend of Martin Luther King jr. Above all, he was committed to helping his people, especially the youth of Puerto Rico. In the off-season, he would travel around the island giving baseball clinics as a way of reaching youngsters. "I go out to different towns, different neighborhoods," he explained. "I get kids together and talk about the importance of sports, the importance of being a good citizen, the importance of respecting their mother and father. I like to get together with the fathers and sons and talk to them."

But Clemente was misunderstood in the United States. Intelligent, intense and outspoken, he was a magnet for controversy. His detractors saw him as aloof, sullen, combative, a hypochondriac and a hot dog, while those who knew him best considered him digni-

fied, reflective, frank, sensitive and stylish. At the root of those misunderstandings lay a profound cultural gap.

Clemente was descended from a class of Puerto Rican campesinos who formed the backbone of the work force on the coffee and sugar plantations. Their values were basic and simple: hard work, honesty, generosity, dignity, respect for one's elders. These were the values instilled in Clemente by his parents. "When I was a boy," he said, "I realized what lovely persons my father and mother were. I learned the right way to live. I never heard any hate in my house. Not for anybody. I never heard my mother say a bad word to my father, or my father to my mother."

This veneration for his parents stayed with Clemente throughout his life. "The respect and caring he had for them was very, very great," says Efrén Bernier, a prominent Puerto Rican lawyer who knew Clemente well. "He never neglected the opportunity to ask for their blessing."

Melchor Clemente was in his mid-50s when his youngest son, Roberto, was born in 1934. Don Melchor was a foreman at a sugarcane mill in Barrio San Antón, a rural neighborhood in the town of Carolina. He also ran a small store where he sold meat and other provisions to his fellow workers. Roberto's mother, Doña Luisa, arose early in the morning to do the laundry for the family of the mill owner. Her days were taken up with cooking and attending to the needs of her six children.

"The family was not rich," says Clemente's widow, Vera, "but they had more than most poor people in those days because the father was a foreman, and they always helped other people. Roberto's mother was very religious, and she used to feed the children who came to their house all the time."

Clemente's older brother Matino remembers Roberto as an earnest, mature youngster. "If anybody needed help with advice or money, he would give it," says Matino, a retired glass worker who still lives in Carolina. "Once, when he was about 11, there

The Clemente clan sat for portrait at Three Rivers Stadium in 1970; from left: parents Melchor and Luisa, Roberto (holding Enrico), Roberto jr., Luis, Vera.

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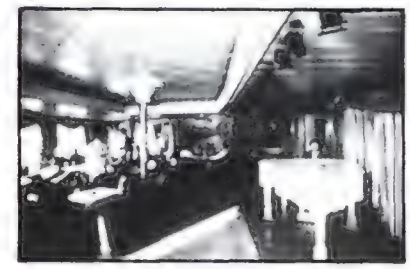

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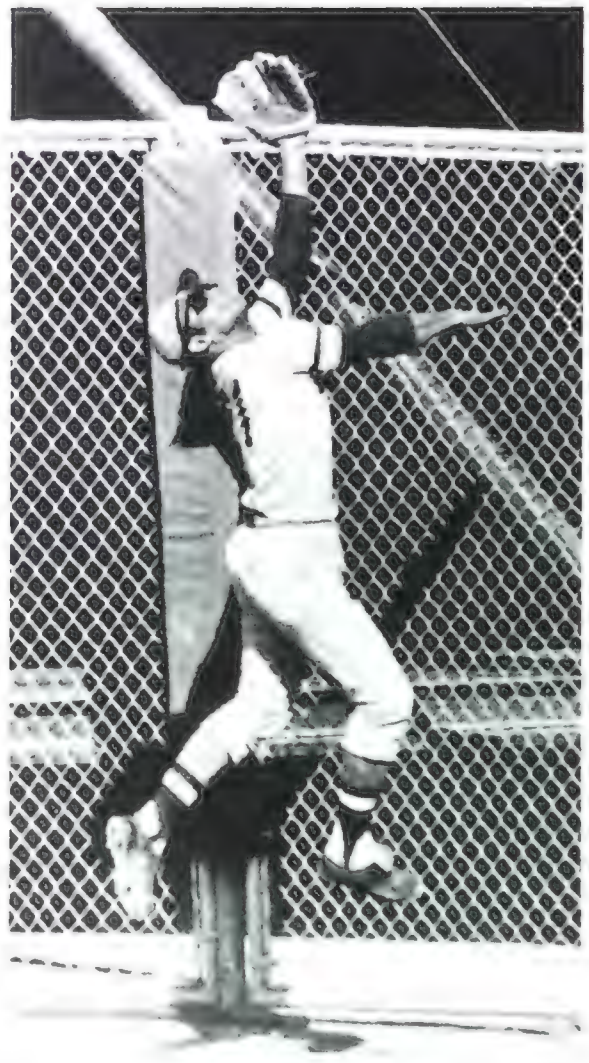

Clemente went to the fence for fly ball in 1971 playoff game against the Giants.

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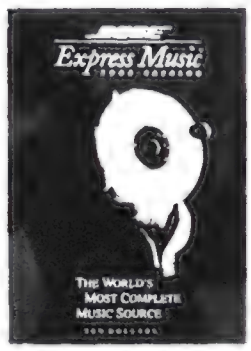

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was an automobile accident. The car caught fire, and he crossed the highway and took the driver out so he wouldn't burn. In school he was a leader. When they needed to build a fence to protect the school, he organized a group of boys, and through various activities, they raised money to help build the fence."

When he was 9 years old, Roberto told his father he wanted a bicycle. Don Melchor arranged for the boy to deliver milk to the neighbors for a penny a day. It took Roberto three years to save enough for the bicycle. In speaking of this episode Clemente said, "Six o'clock every morning, I went for the milk. I wanted to do it. I wanted to have work, to be a good man."

The memory of the adversity he experienced as a youth stayed with Clemente throughout his life. "I grew up with people that really had to struggle to live," he would say. "I am from the poor people; I represent the poor

people. I like workers. I like people that suffer because these people have a different approach to life from the people that have everything and don't know what suffering is."

From early childhood, Clemente was obsessed with baseball, and as he grew he began to regard the game with a fervor akin to a religious calling. "I wanted to be a ballplayer," he said. "And the more I thought about it, the more I became convinced God wanted me to. I was sure I came to this world for some reason."

Juan González, a contemporary of Clemente's who still lives in Barrio San Antón, remembers his friend well. "He was playing ball all the time. We used to throw him bottle caps, and he would practice hitting with a broomstick. He would throw a tennis ball against the wall of his house, and his father would get mad. When we chose sides, everybody wanted him because he was such a good player. He wore big shoes, and when he slid, he dug a trench with his shoes. His shoes used to break from sliding, and when he was about 12 years old, his father finally told him he was too big to still be playing ball."

All attempts to turn Roberto away from baseball were futile. He worked ceaselessly at honing his skills. He was 18 when he attended a local tryout camp cosponsored by Al Campanis, who at that time was a scout for the then Brooklyn Dodgers, and Pedrín Zorrilla, owner of the Santurce team of the Puerto Rican professional winter league. About 70 players showed up.

"We started with the outfielders," recalls Campanis. "They lined up in center field and we hit fungoes to them, about 270 feet from home plate. The first outfielder threw, the second outfielder threw–below-average arms. The third man–I didn't know his name

Taking up outfield position, Clemente tipped hat to crowd after getting 3,000th hit in final at-bat of 1972 season. It was to be the last official hit of his career.

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yet–threw a dart on one bounce to third base. Threw the hell out of the ball. Then he threw another. I said, 'That's enough.' Then we had the timed races–60 yards. Everybody's running about 7.2, 7.3, which is average major league time. Then Clemente came and ran a 6.4-plus. That's a track man's time! And in a baseball uniform! I asked him to run again, and he was even a little faster. He could fly! I said, 'If the son of a gun can hold a bat in his hands, I'm gonna sign this guy.' He got up to the plate, and he was hitting nothing but ropes. Over the left-field fence, over the right-field fence. Line drives. He was the best free-agent athlete I have ever seen."

Campanis couldn't sign his discovery because Clemente was underage. The Puerto Rican winter league operated under different rules, and so Roberto signed with the Santurce club. He saw limited action in his first season, but the next year he batted .288, played alongside Willie Mays in the outfield and was approached by nine major league clubs. Clemente hadn't forgotten his initial contract with Campanis, however, and in February 1954 he signed with the Dodgers for a $5,000 salary and a $10,000 bonus.

Clemente spent the '54 season with the Dodgers' farm club in Montreal. Under the rules of the time, a player who was signed for a bonus of more than $4,000 and not kept on the major league roster was eligible to be drafted by another team, and at the end of the season the Pirates snatched him up. In 1955, with one year of minor league play under his belt and only an elemental knowledge of English at his command, the 21-year-old Clemente became the Pittsburgh Pirates' right fielder.

Over the next 18 seasons, he relentlessly carved out a place for himself in the pantheon of baseball's immortals. During the latter part of his career, the only other players mentioned in the same breath were Willie Mays and

California freelancer Jay Feldman is now working on a biography of the great No. 21, Roberto Clemente.

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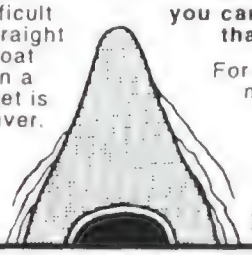

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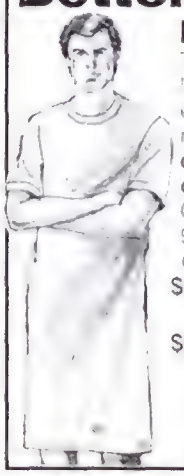

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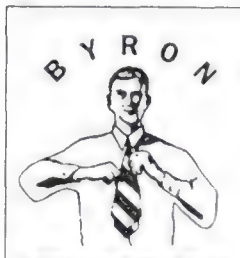

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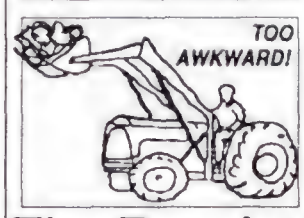

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new culture. "I didn't even know where Pittsburgh was," he later confessed. Above all, there was the language barrier. "He hadn't mastered English," says Joe L. Brown, who went to work for the Pirates as a front-office assistant the same year Clemente arrived and went on to become the team's general manager. "He found it difficult to make his feelings clear. He was an emotional person, a very sensitive person, and he was not understood."

This made for strained relations with many of the sportswriters. They frequently misquoted him. They transcribed his speech phonetically and at times even went so far as to substitute "me" for "I," thereby making his English seem worse than it was. One early story in the Pittsburgh *Press* quoted him as saying, "I like run all time. I go 100 metres 11 seconds. Goot? I wance run 400 metres 52 seconds. Better? One theeng I like Merica, new autos. Buy myself new auto. Whee!" Clemente was humiliated by such attempts to burlesque him, and he mistrusted writers for the rest of his career.

Language was a problem in his dealings with Pirate manager Danny Murtaugh, too. "Murtaugh, he treated everybody the same," says former Pirate second baseman Bill Mazeroski. "He hollered at everybody. Roberto wasn't the type of guy you just took off and embarrassed in front of the team. He'd crawl in a shell, and the more Murtaugh hollered at him, the more moody he got."

Those difficulties were surely a factor in Clemente's slow start, but in 1960 he blossomed and, not coincidentally, the Pirates won the National League pennant. Roberto hit .314 (third in the league), with 16 home runs and 94 runs batted in. In the World Series, he led the team with nine hits as the Pirates beat the favored New York Yankees on Mazeroski's famous ninth-inning home run in Game 7. Afterward, in the pandemonium of the Pittsburgh clubhouse, Roberto went around congratulating his teammates, making a special point of talking to manager Murtaugh.

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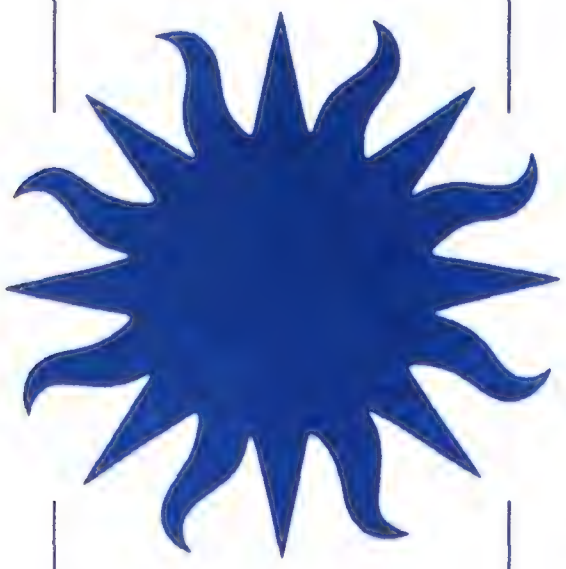

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by Mark Parker

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Then he quietly dressed and left. "I came out of the clubhouse and saw all those thousands of fans in the streets," he said. "It was something you cannot describe. I did not feel like a player at the time. I felt like one of those persons, and I walked the streets among them."

During the off-season, Clemente learned that the writers had chosen his teammate Dick Groat as the National League's MVP. Clemente placed eighth in the balloting, having received not a single first-place vote. The lack of recognition of his role in the Pirates' success angered Clemente. He told reporters, "I never say Groat should not win it. I feel I should not be close to tenth."

The next season, playing like a man possessed, Clemente won his first batting title with a .351 average. As a growing star, he now attracted the attention of the national media, and he used that forum to condemn baseball's attitudes toward Latin Americans. "Roberto Clemente was to Latinos what Jackie Robinson was to black baseball players," says Luis Mayoral, a close friend of Clemente's who works in the Texas Rangers' front office. "He spoke up for Latinos; he was the first one who dared to speak out."

Clemente did not mince words. "Latin American Negro ballplayers are treated today much like all Negroes were treated in baseball in the early days of the broken color barrier," he told *Sport* magazine. "They are subjected to prejudices and stamped with generalizations. Because they speak Spanish among themselves, they are set off as a minority within a minority, and they bear the brunt of the sport's remaining racial prejudices. . . . 'They're all lazy, look for the easy way, the short cut,' is one charge. 'They have no guts,' is another. There are more."

He might have added, "They're hypochondriacs," a charge that was especially galling to Clemente, whose numerous injuries and other health problems were legendary. "The local press felt he was a malingerer," says

Roberto Clemente jr., now 28, visits new municipal stadium, named for his father, in Carolina, Puerto Rico.

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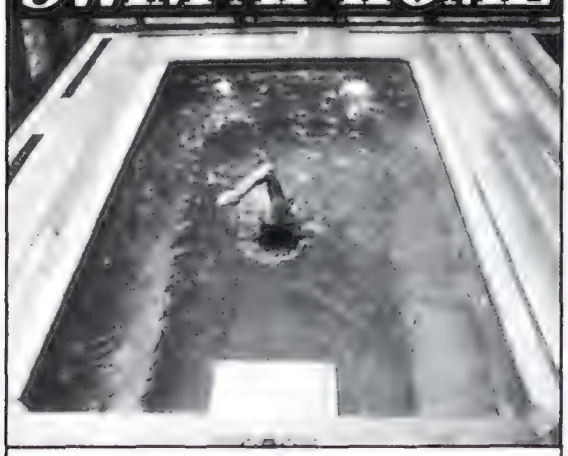

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Joe Brown. "It wasn't true, but even some of the players, the manager and the coaches didn't want to recognize that his injuries were real." To Clemente, this was further evidence of a cultural bias. "When Mickey Mantle says his leg is hurt, it is OK," he complained. "If a Latin or a black is sick, they say it is in his head. Felipe Alou once went to his team doctor and the doctor said, 'You have nothing wrong.' The next day he went to a private doctor and the doctor told him, 'You have a broken foot.'"

Clemente took Latino players under his wing. "He always tried to help out the younger ones," says the Panamanian-born Manny Sanguillen, Clemente's closest friend among his teammates. When the Dominican outfielder Mateo Alou, Felipe's brother, came to Pittsburgh after six mediocre seasons with San Francisco, the new Pirate manager, Harry Walker, noticed that the talented left-handed hitter was trying to pull every pitch to right field. As a result, pitchers kept the ball outside, and Alou was helpless. Walker tried without success to change Alou's approach. Finally, he asked Clemente for help. Clemente began by translating Walker's advice for Alou, and thereafter, whenever his outfield mate took batting practice, Clemente would station himself at third base and shout in Spanish, "Punch the ball at me, forget about pulling it to right; hit to left, to *left*." It worked so well that Alou, with a .342 batting average, took the batting crown from Clemente.

Clemente couldn't complain. He played well enough that year to capture the league's MVP award. Finally he was beginning to receive the respect he craved. But it was more than a personal quest—it was a crusade for all Latino ballplayers. "The Latin American player doesn't get the recognition he deserves," he told a wire-service reporter. "We have self-satisfaction, yes, but after the season is over, nobody cares about us."

And it was not just recognition of their skills that Clemente sought for

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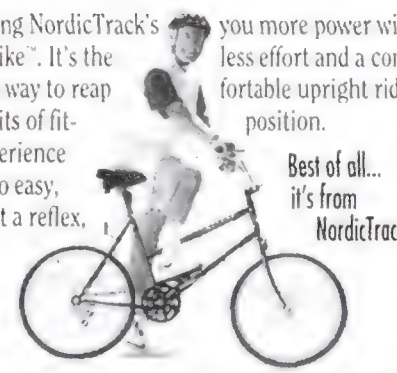

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At home in Carolina, Vera Clemente shows some of her husband's trophies to grandson Luis. He holds silver bat symbolizing one of Roberto's many titles.

himself and his brothers. As *Time* magazine noted, "Clemente has three batting titles to his credit–but nobody has ever asked him to do a shaving-cream commercial." Being passed over for endorsements and speaking engagements rankled Clemente. "It is harder for a Puerto Rican or Latin ballplayer," he said. "People do not want to give them any work off the field. So no one knows them. I would make a lot more money in baseball if I were a white American."

Finally, toward the end of his career, he acknowledged some progress in changing attitudes. "My greatest satisfaction comes from helping to erase the old opinion about Latin Americans and blacks. People never questioned our ability, but they considered us inferior to their station of life. Simply because many of us were poor we were thought to be low-class. Even our integrity was questioned."

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Clemente continued to excel on the field, but it was not until the 1971 World Series against the Baltimore Orioles that he finally achieved superstar status. Seizing the opportunity to display his skills on national television, he turned the Series into a personal showcase. In the first two games–both won by the Orioles–he had four hits and displayed his fabled arm with breathtaking throws. The Pirates won the next three games, led by Clemente. In Game 6 he tripled and homered, but Baltimore won. In Game 7, he clinched the outstanding player award with another home run as the Pirates won the Series. Even so sophisticated a student of the game as the *New Yorker*'s Roger Angell seemed awed. Clemente, he marveled, was playing "a kind of baseball that none of us had ever seen before–throwing and running and hitting at something close to the level of absolute perfection."

In the clubhouse, Clemente was called before the TV cameras. "First, I would like to say something in Spanish to my mother and father in Puerto Rico," he began. Then, "*En el día más grande de mi vida, les pido sus bendiciones* (On the greatest day of my life, I ask for your blessing)."

That Clemente should have died on a mission of mercy was not inconsistent with anything in his life. "He had something inborn that made him want to help other people," says Vera Clemente. "One time we were in a taxi in New York," remembers Sanguillen. "The guy took us everywhere, but Roberto knew the way to the ballpark. He said, 'Listen, I know it's only a fifteen- or twenty-five-dollar ride. If you need money that bad, don't try to hurt people. I'll give you twenty-five dollars plus two hundred dollars more.' The guy got out and kissed his hands. That's the type of man Clemente was."

Today, Roberto Clemente is exalted throughout Latin America as much for his humanitarian work as for his baseball accomplishments. Since her husband's death, Vera Clemente has devoted herself to the building and

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management of Roberto Clemente Sports City in Carolina. "Roberto was always worried about the children and adolescents," she says. "He wanted to build something where they would have facilities for all sports, with the purpose of uniting families and eliminating juvenile delinquency."

Sports City is built on 304 acres of marshland donated by the government of Puerto Rico. Progress has been slow—landfill alone cost millions, and still, when it rains heavily, the ground tends to revert to its original state—but the sprawling complex now includes baseball fields, batting cages, basketball courts, a swimming pool, a track-and-field stadium and a sports-medicine facility. The most visible and notable feature of Sports City is the Raiders baseball academy, which has produced a significant crop of current major-leaguers, including Ruben Sierra, Jose Guzman, Carlos Baerga, Benito Santiago and Ivan Rodriguez.

The next phase of development includes completion of a baseball stadium, and construction of a gymnasium, an Olympic-size swimming pool and an 18-hole golf course. In keeping with Clemente's original vision, programs in drama, music, dance and folklore supplement the main emphasis on athletics, and the overall blueprint calls for recreational facilities for the disabled, a museum, a camping area and arts-and-crafts facilities. Sports City now has an annual budget of $500,000 (operating funds come mainly from fundraising events, ticket sales and the government of Puerto Rico) and 30 full-time staff members. Last year approximately 113,000 children and visitors participated in various programs.

Vera Clemente is executive director of Sports City. Roberto jr., 28, is an informal member of the board of directors. On a sunny afternoon not long ago, he dropped by to watch a choose-up game of baseball. "This group of kids—we went into the projects and brought them here in school buses," he explained. "We had to go in and talk to the gang leaders, so they would let the kids come out of the neighborhood. It's really sad, but we'll do whatever it takes to get them out of the streets and trouble—to educate them in what life is all about. It's very important for us because these kids are our future, and even if they don't play ball for a career, they can be part of society in a good way." He was interrupted by the sounds of children having fun—shouts, cheers and laughter. He paused and reflected for a moment. "I believe my father would approve of what we're doing here."

School bus bearing star's name and number heads from San Juan to Sports City complex Clemente conceived as a way to keep youngsters out of trouble.

Book reviews

Drawn to Trouble: Confessions of a Master Forger
Eric Hebborn
Random House, $25

To those of us who don't buy, sell or study original art, the notion that six- or seven-figure prices are sometimes paid for fakes is downright entertaining. There is a perverse pleasure in seeing experts duped, institutions embarrassed and fat bank accounts slimmed by rascals wielding nothing more dangerous than brushes and pens. Getting stuck with a fake is a very public comeuppance–like getting a pie in the face on the way to a celebrity gala–and watching some trickster dupe the rich and famous is almost as satisfying as being important enough to get your own invitation to the ball.

Readers who feel this way will take great delight in *Drawn to Trouble*, Eric Hebborn's autobiographical account of his career as a faker of master drawings. (There is a Hebborn "Piranesi" in the Danish National Gallery; the Pierpont Morgan Library owns a "Francesco del Cossa"; the British Museum bought a "Van Dyck.") The writing is droll, clever and filled with tales of entertaining shams and scams. While explaining the tricks of his trade (explanations regularly illustrated by his work) Hebborn teaches us much about art and its marketing.

His view of art and ownership is encapsulated in an account of his own purchase of an Apulian vase:

"The ancient vases from southern Italy of the type I was gingerly turning around in my hands are in reality only imitations of the finer ones made in Greece known as 'Attic' vases. So in a sense it could be argued that the object I was so respectfully handling was an ancient fake. Was I sup-

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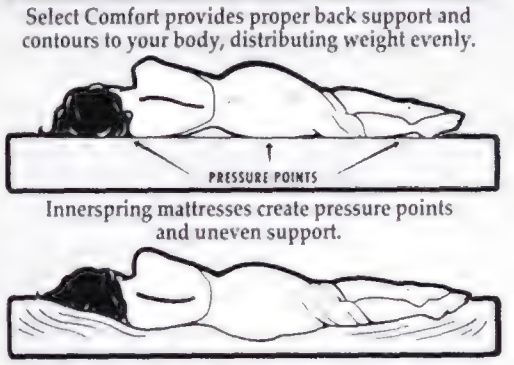

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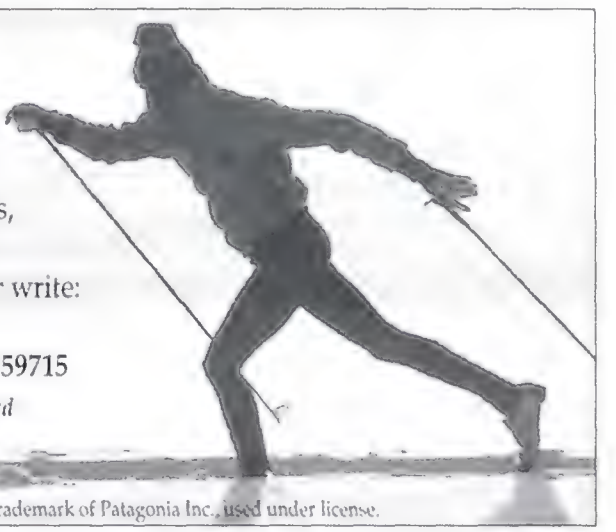

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posed to dislike the krater for not being Attic and dismiss it as a miserable imitation? Perhaps I was, but I did not. . . ."

Hebborn's claim that art should only be valued for the pleasure it inspires may seem more than a little self-serving. After all, if he merely wanted to make and sell beautiful drawings, he didn't need to search out antique paper to draw them on and work so carefully to duplicate the style and technique of specific historical figures. But he also sees fakery as a game. It is Hebborn against the world, pitting his knowledge and skill against the knowledge, skill and analytical devices of the dealers, curators and art historians who represent the buyers of art. "To sell a master drawing to someone lacking the necessary expertise to make a proper appraisal of it is at best a hollow victory," he notes. "Only the experts are worth fooling, and the greater the expert, the greater the satisfaction of deceiving him."

Hebborn's skill has earned him a villa in Italy, a fine collection of rare and valuable objects, and the immense pleasure of seeing his creations in some of the most important museums, exhibitions and collections in the world.

These rewards did not come easy. Hebborn's earliest essays in what he calls "the language of line" earned him nothing but trouble. When, at age 5, he came home from school with a drawing of an owl, his horrid mother, Rose, refused to believe that he had drawn it. "What she really objected to was the attribution—on what grounds, like many a scholar and expert of greater erudition . . . she did not care to make clear. . . . 'You bleedin' little liar,'" she swore.

Given the miserable excuses for parents that Eric was born to, it was a mercy when he was sent to reform school, and an even greater mercy that he was paroled to a foster home instead of being returned to his family.

Hebborn rambles on in a witty, whimsical vein. He tells about learning to draw and paint. Apprenticed to a restorer, Hebborn discovers the depths of that sometimes questionable craft when his rascal of a master acquires some blank canvas from an equally rascally dealer ("It had an original Dutch seventeenth-century stretcher, a Dutch seventeenth-century canvas, and a Dutch seventeenth-century ground. All it lacked was a Dutch seventeenth-century picture to make it worth a small fortune").

Should we be horrified by this forger's success? He has certainly done much to

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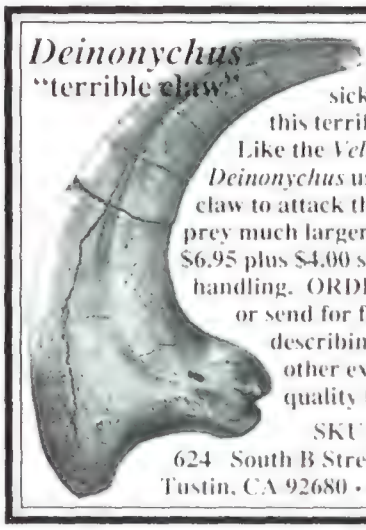

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poison the art historian's well. Before being unmasked in 1978 he claims to have drawn and sold more than 500 "Old Masters," and from 1978 to 1988 he says he produced about 500 more. "It gives me some satisfaction," he writes, "to note that the museums are still buying them and I look forward to the recent acquisition notices in their bulletins with the same eagerness as some people await the football results."

Still, it is hard to be too concerned. Each artist has a core of works whose histories demonstrate their authenticity, and I for one am happy to let the experts argue over the rest. After all, says Hebborn, "money paid for something you really enjoy . . . is always money well spent," and if someone later tells you your purchase is a fake, there really is no such thing–"only fake experts and their fake labels." His story, however, will convince anyone looking to buy a work of art to think twice, and to imagine the dealer wearing a big red pin that reads "Caveat Emptor"–Let the buyer beware.

John R. Alden is an archaeologist and freelance book reviewer in Michigan.

Mama Makes Up Her Mind And Other Dangers of Southern Living
Bailey White
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Once upon a summer night in south Georgia, Bailey White's sister dragged their mother to the movies to see Madonna. "So Mama saw Madonna. It worried her. 'What if you had turned out like that?' she said to me." Well, the Bailey White who emerges from these stories, a first-grade teacher, a homebody, a determined gardener and distiller of flower essences, bears scant resemblance to the Material Girl of Madonna's lyrics.

About the nearest she gets to glamour, in fact, is while she and her mother and sister drive to a cousin's wedding: "I was sitting in the backseat, admiring my lips in the rearview mirror. My cousin had given me some lipstick–not the ordinary kind but some beautiful iridescent goo in a little plastic tub with a screw-off top. . . . I'd seen lips like these in magazines, I decided, on women wearing billowy clothes who stalked along city streets in high-heeled shoes as if they knew where they were going and wanted to be going there.

"'The lips of a stranger,' I said out loud, watching them, as if by magic, form my words."

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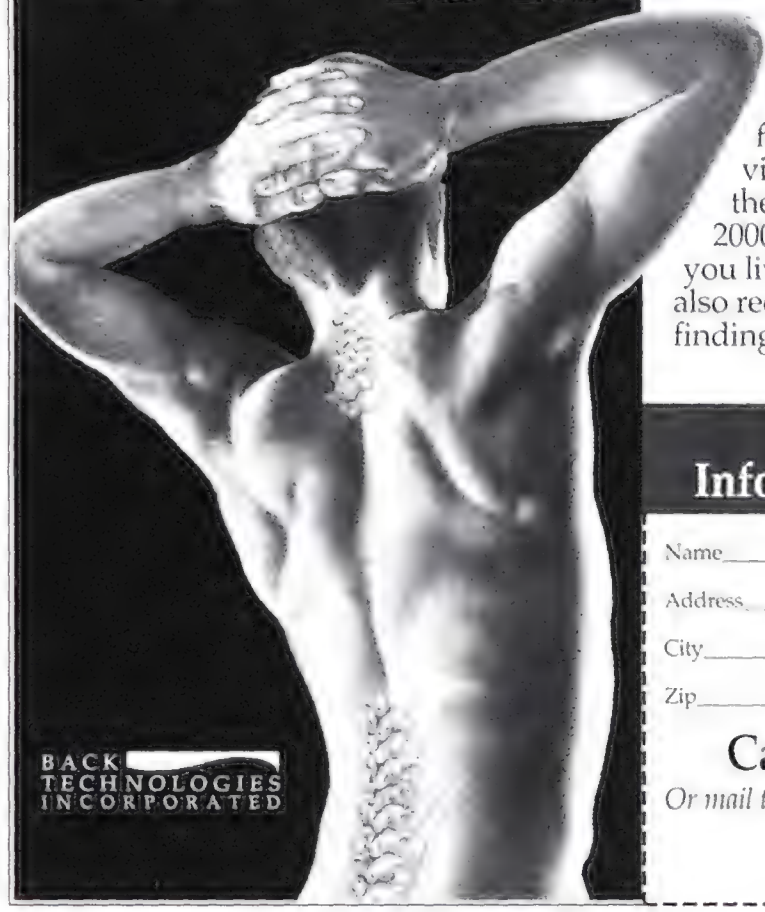

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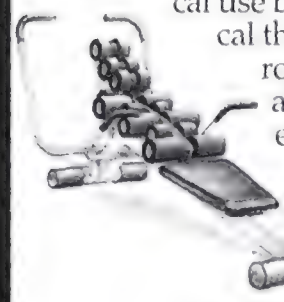

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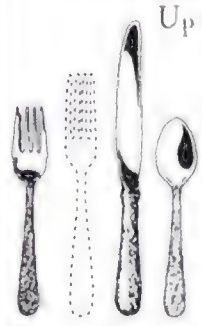

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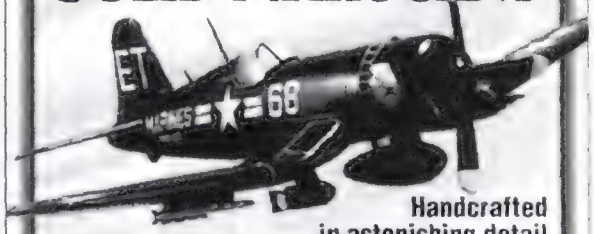

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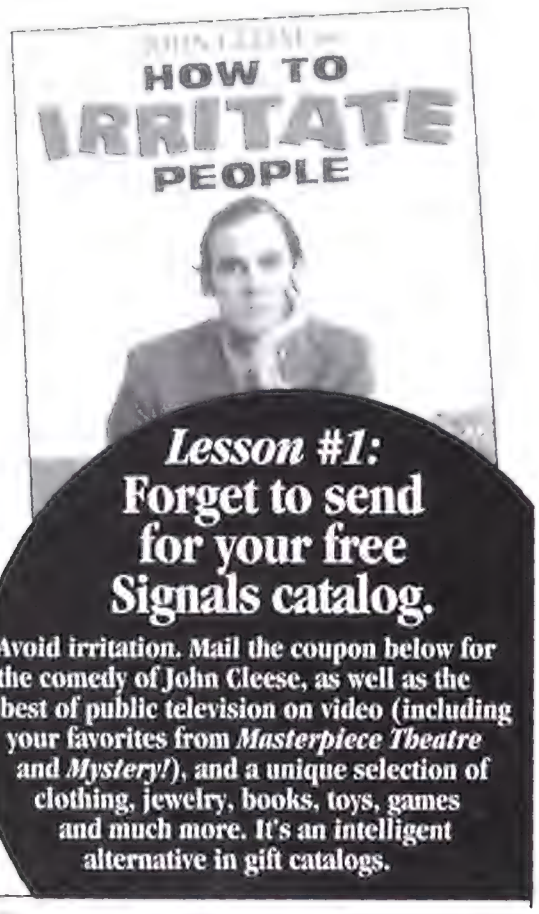

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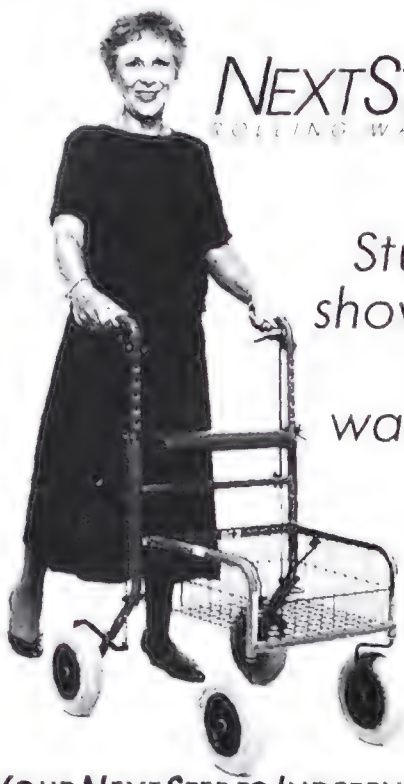

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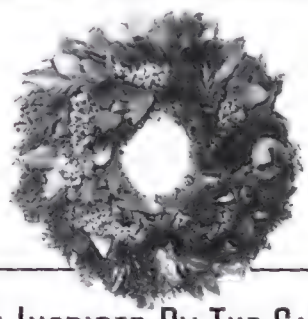

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er, is more than made up for in literary dazzle. This is Bailey White's first book, a collection of her humorous commentaries for National Public Radio (along with a few of her contributions to SMITHSONIAN's back page). And it is a book that should establish her in the pantheon of Southern writers. She may not be openly welcomed there, by the great literary ghosts in residence, for fear she will turn the place into something like the house she shares with her mother:

"Mama and I live in one of those houses where things accumulate. Something can get laid down on a table or in the seat of a broken chair and just stay there forever." Among the items she enumerates in loving detail, one finds her great-grandmother's coat "hung on a nail before she died"; a cousin's unfinished model of the clipper ship *Flying Cloud*; toy popguns from three generations ago; an old dropseat union suit folded atop the carburetor of a Model A Ford, and much, much more. "After a while," the author delicately observes, "things begin to interlock. I really don't think we could get the ship model out in one piece even if we tried."

Of course, the contents of this house are not its only peculiarities. There are the meals. "We have a prissy aunt Eleanor who comes to dinner every third Friday. We always get out the linen and polish the silver when she comes. She expects it. Last month we sat her down to an elegant meal, complete with the Spode china and camellias in a crystal bowl.

"'The quail are delicious,' my aunt sighed. 'And I haven't found a single piece of shot. How do you manage it?'

"'Intersection of 93 and Baggs Road,' recites Mama. 'Green late model pickup, Florida tag. Have another one. And some rice, El.'"

Bailey White doesn't mince words about her mother's ways, and she can be downright blunt. "My mother eats things she finds dead on the road," she explains. "Her standards are high. She claims she won't eat anything that's not a fresh kill. But I don't trust her. . . . I won't eat it unless she can tell me the model and tag number of the car that struck it."

In the small-town Southern world of refined eccentricities that Bailey White inhabits, or invents, there are more than enough sisters, cousins, aunts and neighbors to make Mama seem almost normal. And the more you read about her, the more she emerges as a woman whose inner wisdom, strength and tolerance

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are kept safely hidden for those rare moments when they are really needed.

Bailey White's vignettes offer us snatches of humor in the largest sense, written with a clear-eyed and often self-mocking compassion. The humor also expresses the generosity of an older, rural society that has almost disappeared in urbanized America. We no longer have the time, or the heart, to find any humor, or any place, for the people who don't fit into our routines.

But in her stories, there's lots of room, and this is part of their appeal. There's room, for example, for Cousin May, who's afraid of cows: "It's something about the way they put their feet down. . . . And those lips–cow lips." One cold November evening May was trying on a dress Mama was making for her "when we heard Buck McCall come in the back door. May dashed out the front . . . we thought she would hurry around the house, come in a side entrance and get dressed." But she didn't reappear. After Buck left, Bailey and Mama found May huddled in the yard, shivering in her petticoat.

"'There were cows,' she chattered through blue lips, 'cows at the door.' Sure enough, two of our neighbor's cows had wandered into our yard." At first May was feverish. "After a week May was better. She wouldn't talk, but she sat up in bed all day and all night and read Anthony Trollope. By the time she had finished the last volume, she was well."

The characters and events Bailey White writes about are often so engaging that it is easy not to notice her writing, and she is so shy that she'd probably blush if we did. As an adolescent, she confesses, "my main goal in life was to be not noticed." Well, Bailey, blush. This book is as beautifully written as a book could be. Here is how she recalls riding an old, old horse as a little girl:

"Tony would fix his bleary gaze on a point way down the road and get ready to move. He seemed to owe his powers of locomotion not to any current process of thought but to some dim memory of walking that would come drifting back to him across the years."

I am sure that the ghosts of the great Southern writers are making room in their pantheon for Bailey White, although the thought of the daunting accumulation of things coming with her probably makes their hair stand on end.

Paul Trachtman is a freelance reviewer based in rural New Mexico.

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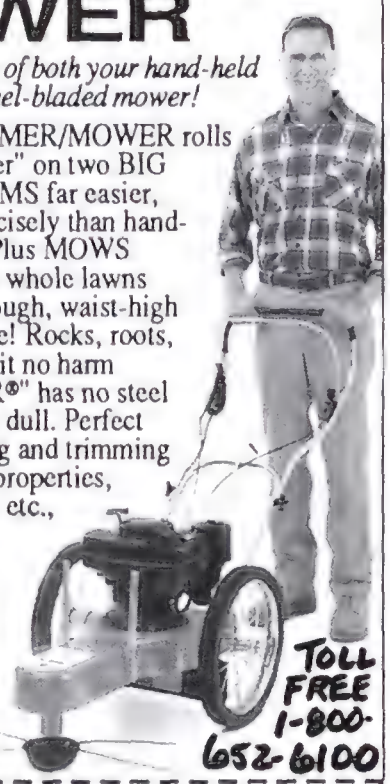

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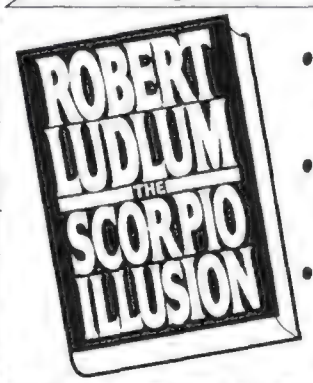

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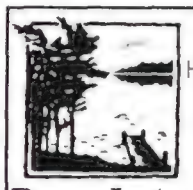

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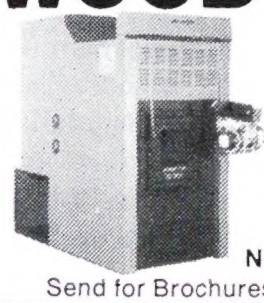

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By Joseph Kastner

My great platypus hunt Down Under, or how I met Bill

I always travel with nature in mind and I'm usually rewarded with something that puts an unexpected image forever in my memory. In Athens one spring, I followed the processional route along which sacrificial goats were once taken up to the Acropolis, and as I walked toward the Parthenon, I smelled something sharp and familiar. Looking down, I saw that I was stepping on patches of chamomile growing as weed in the ancient rubble. Ever since then, that fragrance in my garden has brought the image of columned ruins and a well-groomed goat taking a last nibble of chamomile.

When I went to Australia a few months ago, I wanted most of all to see the duckbill platypus, a uniquely Australian animal with a grotesque beak and a curious history. I learned about it while writing a book on old zoological illustrations. When the platypus was first described by explorers a couple of centuries back, European scientists dismissed it as a hoax or a myth, like the unicorn or phoenix, but it turned out to be real.

Eons ago, when animals were evolving into reptiles and mammals, the process produced an implausible creature that laid eggs and had a somewhat reptilian skeleton but also made milk and nursed its young. Other creatures continued to change, but evolution stopped then and there for the platypus, stranding it in eternal ambivalence.

It is a reclusive animal that lives in burrows along streams and comes out to feed only at dawn and dusk. The most interesting place to see it, a zoologist told me, was not the Australian mainland but on the island state of Tasmania. Tasmania had always seemed to me to be, like Timbuktu, an end-of-the-world destination, and I opted to go there.

I was in no particular hurry to see the platypus, since Australia presented so many other natural distractions. Gaudy red-and-green and red-and-blue parrots scrounged on the sidewalks of Canberra, as ever present as pigeons in New York. White cockatoos screamed from the trees, and a magpie sitting on a stump sang me a ten-minute serenade–warbling, trilling, dropping into deep oompahs and repeating itself like an overworked hurdy-gurdy. At an island on the Great Barrier Reef, banded rails jumped up on my dinner table for crumbs. Black noddies muttered at me from casuarina trees, and egrets preened themselves within reach on low branches.

Then a stumble on some coral and an injured arm knocked Tasmania off my itinerary. A more conveniently located rain forest looked promising, but the hours the platypus keeps and my travel schedule couldn't be reconciled. Earlier an Australian friend had told me she saw platypuses all the time around her country home. Now, when I pinned her down, it turned out she had seen one only once, and then only by chance. I was starting to become skeptical now and turned to a sure thing.

The Taronga Zoo in Sydney has a well-known platypus house. It wouldn't be the same as a wild waterway at dawn, but it was reliable. At the zoo, I saw wombats and wallabies, bandicoots and quolls and laughing kookaburras, and all of the other creatures in the books that I read aloud to the grandchildren. The red kangaroos sat up on their hind legs, and the koalas huddled in the crotches of caged-in trees–cute but, I thought, a little sullen. At the nocturnal animal house, looking at flying foxes and Tasmanian devils, I was engulfed by small schoolchildren who, seeing the sign "QUIET DO NOT DISTURB THE ANIMALS," set up such a warning chorus of shushes that they could not hear their teachers telling them to pipe down.

Extricating myself, I set out for the platypus house, weaving past white ibis that were busily picking up picnic leftovers. When I finally got there, I couldn't believe what I saw. "CLOSED FOR RENOVATION," the sign read.

That really did it for my platypus pilgrimage. Or did it? Surely a platypus must be around here somewhere.

The people at the zoo office said yes, one was. But it was in a working area that was out-of-bounds to visitors. I pleaded that I had come so far to see one and it meant so much to me.

After a few phone calls, a keeper was located who agreed to take me through a warren of cages, pens and tanks to a little fenced pool. He opened the gate and, peering into the water, announced, "Bill's not in here."

"He got out?"

"No, he's in the nesting box; it's mating time."

The nesting box was right there, a large wooden crate set over a small passage to the pool.

"Can I see him?"

"Nothing to see. He's down at the bottom, covered up."

"Just a look?"

The lid was pulled up and I looked down on an empty bed of seaweed. No Bill in sight. Then, just as the lid was going down, the seaweed began to stir. A little section lifted and a small wave moved across the surface.

"That's Bill," said the keeper, very pleased. "Working on a burrow."

I felt deeply grateful to Bill. He was doing his best despite his plight. Dead-ended by evolution, displaced by renovation and consigned to a wooden crate beside a cement pool, he was nevertheless, with an enigmatic ripple on a blank stretch of seaweed, giving me an unforgettable image to keep as a souvenir.

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